



UMass  
Extension

# Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



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## CROP CONDITIONS

Sweet potato slips have had a nice time getting established in the rainy weather. Now that we've gotten a break from the rain at last, cucurbit transplants and seeds continue to go into fields and potato planting can finally get caught up. Summer CSAs have started up and some are having difficulties filling shares due to the rainy weather keeping growth slow. One grower lamented that last year at this time they were picking ripe tomatoes out of an unheated tunnel, but this year the tomatoes are still green and foliar diseases are spreading. Some of you may be looking at your crops wondering, are they yellow because of disease, being waterlogged, getting cold, or lacking nitrogen? Perhaps all four. But wait! Before applying a nitrogen sidedress, take a cheap, quick and easy pre-sidedress soil nitrate test (PSNT) to determine if your soils have sufficient N for your crops or not. See the article in this issue for details on using the PSNT. With some hotter, drier weather coming up, the prospect of cultivating for weeds seems more promising. You can cultivate those weeds and incorporate sidedressed N simultaneously (or not, depending on the PSNT result).

This issue marks the beginning of the third year of our sponsorship and donation campaign to help keep this publication alive and accessible to growers at no cost. We have raised over \$8,000 so far this year in support of the production of Vegetable Notes! Thank you to the many farmers and businesses in Massachusetts and around New England who donated. We are so grateful for your work, and for your support of our program. The farmers and businesses whose logos appear at the end of this issue contributed at the sponsorship level. We are very thankful for their generosity.



*A living mulch of clover coming in nicely between plastic beds at a farm in Middlesex, Co., MA*

## PEST ALERTS

### **Allium:**

**Onion thrips** are being found still in small numbers in Norfolk Co. and Hampshire Co., MA. Scout plants along field margins where infestations

build early, as well as checking across the field. Scout weekly to determine if populations are increasing. Look closely between the leaf blades, especially in the center of the plant around the growing tip, to find the light yellow nymphs or darker adults. A widely used threshold is 1-3 thrips per leaf or 30 per plant.

**White rot** (*Sclerotium cepivorum*): Two weeks ago, symptoms were seen in Orange Co., NY on garlic grown in muck soils. We expect to see more of this disease further north in the coming weeks as the optimum conditions for germination of sclerotia occur when soil temperatures are between 59° to 64°F. Symptoms include flagging garlic, wilting plants, rotten bulbs. Sometimes white mycelia is seen around the bulb and stem and this time of year



*Garlic bulbs affected with white rot. Photo: Bruce Watt*

sclerotia, the size of poppy seeds, may also be visible. Dig out plants carefully because sclerotia cling loosely to roots. This pathogen is hosted only on alliums. Spreads in garlic from infected bulbs.

**Beets, Spinach, Swiss Chard:**

[Spinach and/or beet leaf miner](#) tunneling now reported in ME, RI, NY and MA. These pests are very similar in behavior, appearance and host preference and are not easily distinguished. Their preferred hosts are beet, spinach and Swiss chard, but are also reported to infest Solonaceous crops and cucurbits. In MA and ME leaf miner was found in tomatillo in places where it is also infesting Swiss chard.

**Brassica:**

[Brassica downy mildew](#) has been confirmed on kohlrabi starts in a greenhouse in Dutchess Co. and Long Island NY. Keep an eye out for this disease in brassica transplants as they go out in the field.

**Basil:**

[Basil Downy Mildew](#) has been reported in ‘Eleanora’ started from seed in transplants in Dutchess Co., NY. The flats were overgrown, ready for transplanting into the field, but cold weather had delayed the grower. Monitor and report the progress of this disease here: [https://docs.google.com/spreadsheets/d/1RWK\\_C-VoNOTjzNfd4TNn-b7KBFdoF-czmSJ193ve7Cc/edit#gid=0](https://docs.google.com/spreadsheets/d/1RWK_C-VoNOTjzNfd4TNn-b7KBFdoF-czmSJ193ve7Cc/edit#gid=0)



*Brassica downy mildew on transplants in a greenhouse, Orange Co., NY. Photo: Cornell Extension*



*Basil downy mildew, Dutchess Co., NY. Photo: Cornell Extension*

**Cucurbits:**

[Melon aphid](#) and other species of aphid were found in high numbers in early season cucumbers in a Worcester Co., MA high tunnel. Lettuce growing next to the cucumbers was clean. Lady beetles have been successful in transplants when released weekly and aphids are in high numbers. If biocontrols still need to be ordered and numbers are high, M-Pede and Azera can be used for knockdown. When nothing works, hand squishing has been deployed in up to 1 acre of greenhouse space effectively by a grower who did not want to use sprays!

**Tomato:**

[Two-spotted Spider Mite](#) (TSSM) was confirmed on greenhouse tomatoes in Middlesex Co., MA last week. Some were still alive one week after treatment with a miticide. Here is some helpful information from Judson Reid at Cornell: “Look for stippling, or small white dots on the surface of foliage. TSSM, their webs and eggs can be found on the underside of leaves, except when in very high numbers when they will move throughout the canopy. For many, a 10x hand-lens will aid in scouting. Biological control is possible with TSSM and releases of predators must begin very early. Phytoseiulus persimilis can be effective, but requires high relative humidity to survive, so may require repeat releases. Other beneficials to control TSSM include Feltiella acarisuga and Amblyseius californicus.” Insecticidal soaps and horticultural oils are effective against TSSM; however, certain plants may be sensitive to these materials particularly in greenhouse settings. Translaminar materials have a longer residual, but are not usually effective at the egg stage, so repeat applications are needed every 5-7 days. The following products are approved for

Table 1. ECB trap counts 5/31/17 - 6/7/17	
Location	ECB Weekly Total
<b>Western, MA</b>	
Amherst	-
Sheffield	-
South Deerfield	-
Whately	2
<b>Central, MA</b>	
Leominster	1
Berlin	-
<b>Eastern, MA</b>	
Millis	0
Sharon	0
Swansea	0
Dover	0
<b>NH</b>	
Litchfield	1
Hollis	0
Mason	2
<b>Burlington, VT</b>	-
<b>NY</b>	-
<b>Kingstown, RI</b>	-

greenhouse use in MA:

- Agrimek (PHI 7 days, REI 12 hours)
- Danitol 2.4 EC (PHI 3 days, REI 24 hours)
- Portal (PHI 1 days, REI 12 hours)

**Sweetcorn:**

**European corn borer** adults are now being captured in locations around NH, NY and MA (see table 1, previous page) and eggs are now being laid in some locations around MA as well (see table 2). Adult emergence occurs at 374 GDD, first eggs at 450 GDD, and peak flight at 631 GDD, base 50°F. If using the biological control *Trichogramma ostrinae*, time these wasp releases with egg laying. If using *Trichogramma* in combination with insecticides, choose a selective material for caterpillars that will not kill wasps, such as Dipel. However, insecticide applications should not be needed until tassel emergence.

**DISEASE MONITORING AND FORECASTING TOOLS**

With cool wet weather this spring, we can expect higher disease pressure than we saw last year. So far this year we have seen early blight in tomato and *Cercospora* leaf spot in Swiss chard, both fungal diseases. While most diseases occur where pathogens have survived in crop residues from last year AND conditions are right, some diseases require a living host and thus move around with their hosts e.g. late blight, cucurbit downy mildew, powdery mildews, and basil downy mildew. Because of the way these pathogens (known as biotrophs) move around and how aggressive they can be, there are national monitoring programs in place that allow you to track them through the season online or by signing up for text alerts. Forecasting models on the other hand attempt to predict where diseases might spread given the current and forecast weather. Here we will highlight a few of these monitoring and forecasting tools.

**Late blight (LB) monitoring** is critical to our understanding of this destructive disease, and to a successful preventive management strategy. The disease is monitored by Extension pathologists across the country online at [USABlight.org](http://USABlight.org). There you can see outbreaks reported on a map which, if you click on a highlighted county, will show you a list of reported outbreaks, whether the disease was affecting tomato and/or potato, and which strain was detected. You can check back to the map periodically when deciding whether or not to spray tomatoes and potatoes, or you can [sign up to get a text alert](#) when an outbreak is reported near you. Remember that late blight outbreaks may also start from infected volunteer potatoes, as opposed to wind-blown spores from nearby outbreaks, so do check your fields and cull piles for volunteers now. **Late blight (LB) has been confirmed only in Florida so far this year, occurring on both potato and tomato and all samples tested have been US-23 strain. Late blight was reported in North Carolina this week and samples are being sent for confirmation and genotyping.**

**Late Blight Forecasting.** The [Network for Environment and Weather Applications \(NEWA\)](#) is a great resource with lots of useful weather data available (growing degree days, hourly-daily-and monthly precipitation, and temperature) and pest forecasting tools. NEWA houses information from a network of weather stations across New England and New York—in MA there are 41 of these networked stations so it’s easy to find one near you. Among the many pest forecasting models there are LB models for potato and tomato which incorporate the past and current weather data as well as the temperature and relative humidity forecasts from the National Weather Service to predict risk of LB infections. They also take into consideration the past and forecast precipitation to calculate “Fungicide Units,” which account for fungicide residues weathering off of leaves during rain events. These models tell you risk of infection and give spray recommendations that incorporate cultivar susceptibility and the relative efficacy of the fungicides sprayed and include organic and conventional materials.

<b>Location</b>	<b>GDD (base 40°F)</b>	<b>GDD (base 50°F)</b>
<b>Western, MA</b>		
Amherst	1103	419
Westfield	1157	459
South Deerfield	1051	392
<b>Central, MA</b>		
Leominster	1082	423
Stow	1161	464
<b>Eastern, MA</b>		
Sharon	1159	457
Seekonk	1229	461
<b>Hollis, NH</b>		
Burlington, VT	1072	440
<b>Newport, RI</b>		
Castleton, NY	1233	502

- In the last few years several different tomato and potato models have been streamlined and integrated into one interface on the NEWA website. The models can be used to:
- Time your first fungicide spray: Risk of first infection is based on emergence of potato foliage from planted seed or volunteers, since that is usually the source of initial inoculum
- Assess risk of **LB**, **Septoria leaf spot** and **early blight** based on forecast weather conditions
- Time subsequent sprays taking into account
  - Risk of LB infection based on weather forecast
  - Fungicide weathering
  - Susceptibility of variety planted

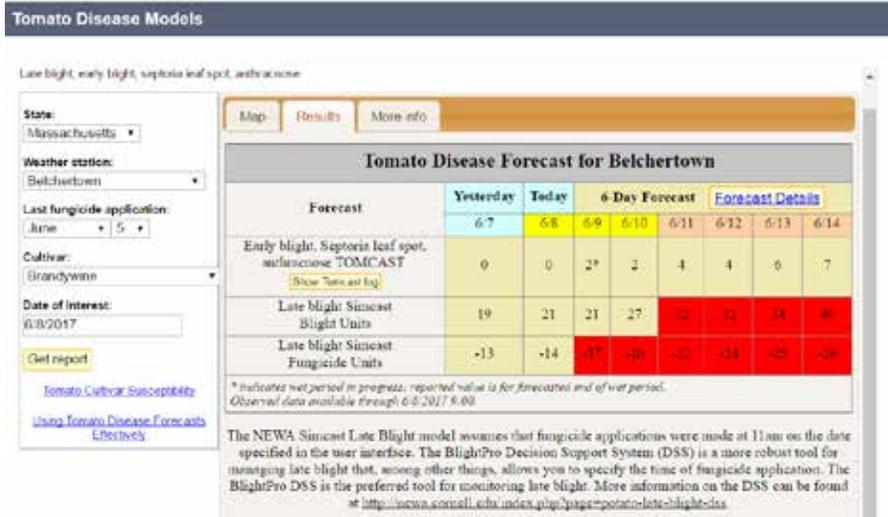


Figure 1. Tomato disease forecast report page.

When you enter all the information requested in the simple drop down menus and click “Get Report,” output like that shown in Figure 1 will be displayed. On the report page you can see blight units increasing over time, and fungicide units decreasing over time, indicating fungicide residue being lost. Actual weather data is indicated in blue in the top row, while data based on forecast weather is indicated by yellow (include rainfall) or orange (not including rainfall—the National Weather Service only forecasts rainfall three days into the future). Once a treatment threshold is reached for either Blight Units (30) or Fungicide Units (-15), a change in color to red will signal that the threshold has been reached, and a spray is recommended.

[The Decision Support System \(DSS\)](#) takes this model a few steps further, allowing you to enter in different fungicides sprayed and taking into account their relative efficacy. If you set up your own DSS account (available for free!), you can also enter data specific to your farm such as irrigation history to get even more precise recommendations. This is definitely the most accurate and site-specific late blight forecast available and it will save your field history information so it is quick to use as well.

**For growers in MA**, we have created a state-wide DSS website which gives a simple report for each of our 41 NEWA weather stations. Follow the link to: <http://blight.eas.cornell.edu/blight/MA>. First, choose the town closest to your farm and select potato or tomato based on the host crop of interest. You will then get output that looks like that in Figure 2. To use the table, first choose the date you last sprayed, listed across the top of the table in green. Next choose the active ingredient or product that you last sprayed, listed along the left-hand side. The table includes six of the most commonly used fungicides for control of late blight, including copper hydroxide which can be used by certified organic growers and home gardeners. Next, choose whether the cultivar being grown is susceptible, moderately susceptible, or moderately resistant to late blight—follow these links to determine the susceptibility of commercial [potato](#) or [tomato](#) cultivars. The intersection of the last spray date column and the fungicide/host resistance row is your recommended spray date. Dates in red are based on past weather or weather forecast within

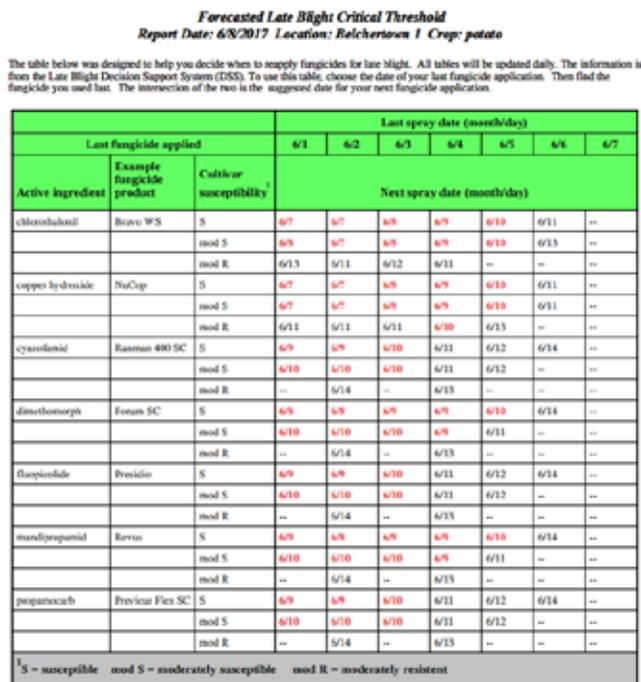


Figure 2. MA DSS output report for potato using the Belchertown weather station.

the next three days and are thus more reliable. Dates in black are based on the last four days of the seven day forecast and are therefore less reliable. If no date is specified it means that a spray is not recommended within the period when weather forecasts are available. The UMass DSS page is updated daily and recommendations will change just as the weather forecast does from day to day.

**Cucurbit downy mildew (CDM)** is a disease affecting forty species of cucurbits. The disease, caused by the oomycete *Pseudoperonospora cubensis*, affects cucurbit crops in fields and greenhouses throughout the US and is especially damaging in warm, humid climates where the pathogen thrives. The disease cannot survive without a living host, so it overwinters in the south where cucurbits are grown continuously, and moves north as the season progresses. Disease spread throughout the US is now monitored annually and disease forecasts are available at [cdm.ipmpipe.org](http://cdm.ipmpipe.org). This site, maintained by the University of North Carolina, provides information about where outbreaks have been confirmed and on which crops. There is also a forecast function which provides risk maps that indicate where and when inoculum might be spread based on forecast storms (see Figure 3). You can also [sign up for e-mail alerts](#) to be notified when new outbreaks occur in your area. **This year, CDM has been confirmed so far in Florida, Texas, Georgia, South Carolina and North Carolina occurring on cucumber, acorn and butternut squash, cantaloupe, giant pumpkin, and watermelon.**

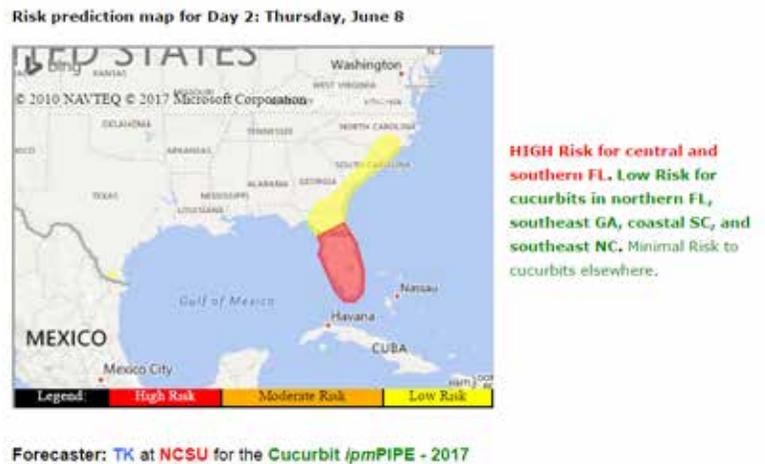


Figure 3. Cucurbit Downy Mildew risk prediction map sample

**Basil downy mildew (BDM)** is another biotrophic pathogen which must move around with its living host, but its movements are much more random than say CDM because of the mass production of basil seedlings which are raised in huge greenhouses and shipped all over the country and then planted out in farms and backyard gardens. The disease spreads quickly and can pop up anywhere through this mechanism, so it can be helpful to see if your neighbors are reporting it. And that is sort of how BDM is monitored—through a grower-self-reporting effort spearheaded by Meg McGrath, Extension Plant Pathologist with Cornell University's Long Island Horticultural Research Center. Meg maintains an open access [google doc](#) where folks (including extension agents, growers, and home gardeners) can enter information about outbreaks they have observed. **So far this year BDM has been reported in Florida, S. Carolina, Ohio, Connecticut (plants were destroyed), Louisiana, Georgia, Maryland, Alabama, Texas, and New Jersey.**

--Written by Susan B. Scheufele, UMass Extension

## **DO MY CROPS NEED MORE NITROGEN?**

With spring rains, nitrogen can leach quickly through sandy soils low in organic matter. On the other hand, in fields with high amounts of slowly decomposing organic matter or newly plowed fields high in sod or cover crop nitrogen may be tied up by microbes breaking down these materials, reducing the amount of nitrogen available to your vegetable crops in these early stages of growth. Routine soil tests are not good predictors of nitrogen (N) availability because plant available N fluctuates greatly throughout the season. Perhaps you have already considered this possibility and taken a Pre-Sidedress Nitrogen Test (PSNT) to determine whether or not your crop should receive any additional nitrogen to improve growth. Many vegetable crops rapidly take up nitrogen in the middle stages of their growth, and a PSNT can tell you if you have enough nitrogen available. Consult Table 1, next page, to determine when to take a PSNT sample for a given crop. Sampling instructions can be found at the [UMass Soil Testing Lab](#) website. When you get your PSNT test results, you will now need to determine how much N to apply and in what form.

**Interpreting PSNT results:** The PSNT measures the current level of nitrate-N (NO<sub>3</sub>) in the soil and can be used to predict the amount of N available for the remaining period of crop growth. This test helps growers avoid the use of excess nitrogen fertilizers, thus eliminating potential run-off or leaching, and provides higher returns on labor and fertilizer

investment. Broadcast and pre-plant nitrogen applications can be reduced or avoided entirely if nitrogen is supplied to plants at key periods of growth. The PSNT is useful in soils that are high in organic matter, have had a history of manure or manure-based fertilizer applications, or have had a cover crop turned under before planting, since microbes will be mineralizing organic nitrogen throughout the season. If the PSNT nitrate level is low, additional N would be expected to increase yields and if the nitrate levels are high, additional N would not increase yields. This test has been used successfully with corn, potatoes, peppers, cucurbits and some brassicas to predict side-dressing needs.

Research conducted by the University of Massachusetts and Connecticut indicates that an appropriate threshold for most vegetable crops is 30 ppm nitrate-N and 25ppm for sweet corn. If the soil nitrate is above this level, side-dressing or top-dressing supplemental N would be of no value and may even decrease yields. As a tool, the PSNT should be used along with a grower’s experience and knowledge of their fields. For example, a field high in organic matter will continue to release nitrogen throughout the season. Research indicates that for each 1% organic matter, we can expect 20 to 40 lb of N per acre per year to be mineralized when conditions are favorable. Interpretation of PSNT results should be made with regard to weather conditions such as recent leaching rains that reduce available N, or high soil temperatures that increase mineralization and therefore available N. Weather conditions should also be considered before making N applications to avoid runoff, leaching and volatilization.

**How much should I side-dress based on PSNT results?** If soils have 0-25 ppm nitrate, apply the full side-dress amount recommended by the New England Vegetable Management Guide for most vegetable crops except for sweetcorn. For the same crops, at 25-30 ppm nitrate you can cut the side-dress rate in half. Above 30 ppm no additional N is needed and could hurt yields. Consult Table 1 for side-dress rates of specific crops.

**What form of nitrogen should I use?** Nitrogen is available in a number of forms; consult pages 37-38 of the [Nutrient Management Guide for New England Vegetable Production](#) for nitrogen options for organic and non-organic growers. Common sources of fertilizer N include urea, ammonium nitrate, mono-ammonium phosphate, di-ammonium phosphate, calcium nitrate and potassium nitrate. Sulphur coated urea is a material which releases N more slowly over a period of several

<b>Table 1.</b> Suggested times for soil sampling vegetable crops to conduct PSNT and Sidedress Nitrogen needs of crops		
<b>Crop</b>	<b>Soil sampling time for PSNT</b>	<b>Sidedress N in Lbs/A<sup>y</sup></b>
Sweet corn	When plants are 6-10” tall	<b>60-90</b>
Cabbage Cauliflower Broccoli Brusselsprouts	2 weeks after transplanting	cabbage, broccoli, brusselsprouts: <b>60</b> cauliflower: <b>30</b>
Celery	2 weeks after transplanting. Sample again in 3-4 weeks	<b>40</b> twice 3-4 weeks apart
Lettuce Endive Escarole	2 weeks after transplanting or after thinning (2-4 leaves)	<b>30-50</b>
Beets	After thinning (2-4 leaves)	<b>30</b>
Pumpkin Winter Squash Cucumber Musk-melon	Before vines are 6” long	pumpkin and winter squash: <b>40-50</b> cucumber and melon: <b>40</b>
Spinach	2- 4 leaves. Sample again after first cutting.	<b>30</b>
Potato	Before plants are 6” tall	<b>40-60<sup>z</sup></b>
Pepper Tomato Eggplant	3-4 weeks after planting. Sample again 3-4 weeks later.	pepper: <b>50</b> , and <b>40</b> later at fruit set tomato: <b>30</b> twice 3-4 weeks apart eggplant: <b>30-50</b>
<sup>y</sup> If soils have 0-25 ppm nitrate, apply the full sidedress amount recommended by the New England Vegetable Management Guide. For crops other than sweet corn, at 25-30 ppm nitrate you can cut the sidedress rate in half. Above 30 ppm no additional N is needed and could hurt yields.		
<sup>z</sup> Potatoes also need 50-125lbs/A Potassium depending on soil test results.		
Adapted from: Rutgers Cooperative Extension Bulletin by J. Heckman, “Soil Nitrate Testing as a Guide to Nitrogen Management for Vegetable Crops” and The New England Vegetable Management Guide.		

weeks. In the soil, urea is converted to ammonium by hydrolysis, which in turn is converted through nitrification to nitrate. This process slightly acidifies soil as hydrogen is released from ammonium (NH<sub>4</sub>) as it converts to nitrate (NO<sub>3</sub>). In warm soils these reactions usually happen fairly quickly if soil pH is over 6.0 and soil moisture and aeration are adequate. For organic growers, nitrogen amendment options include: manure, seed meals and emulsions, or animal byproducts such as dried blood and feather meal. Many organic nitrogen sources are not readily available to the crop, and so organic growers reason that they should apply all their N fertilizer needs in the spring as it will slowly become available through microbial action throughout the season. However, keep in mind that previous year's fertilizer applications will continue to contribute N each following year. Also, there are more soluble and rapidly available forms of organic nitrogen now on the market which are preferable for side-dressing either incorporated into the soil or fertigated. Nitrate is the predominant form of N preferred by most plants, and any N fertilizer can be used because they will be converted to nitrate eventually. Many growers use calcium nitrate and sometimes potassium nitrate for top-dressing or side-dressing N on crops subject to calcium-related disorders. When a slow release form of urea is used, only a small amount of ammonium is present at a given time and is unlikely to cause a problem with calcium nutrition, but N may not be available quickly enough to meet the demands of a rapidly growing crop.

**In summary:** Nitrogen is easily leached from the soil. If this happens, money is wasted and ground water may be contaminated. Nitrogen applications should be timed to meet crop demands. Large pre-plant broadcast N applications should be avoided. A PSNT should be used to determine the need, if any, for additional N during the growing season. If needed, additional N can be applied by top-dressing, side-dressing or injection into a trickle irrigation system.

-- by K. Campbell-Nelson, UMass Vegetable Extension with thanks to J. Howell, UMass Extension and Joseph R. Heckman, Rutgers University

## **HERBICIDE OPTIONS FOR PUMPKINS AND SQUASH**

--by Charles Bornt, Cornell University, Eastern New York Commercial Horticulture Program (ENYCHP)

*Ed note: This article was originally published in the Eastern New York Commercial Horticulture Vegetable News with New York growers in mind. There are some labeling differences for the materials discussed below between Massachusetts and New York. In particular, **we cannot use Reflex on pumpkins or squash in MA**—there is a Special Local Needs label for this product in New York, but not MA. All of the notes below regarding obtaining the indemnification label for **Dual Magnum** also apply in Massachusetts. I have noted in the text where Massachusetts growers should be aware of differences.*

With the changing of the weather I think it's safe to say that there will be a lot of pumpkins and winter squash going into the ground in the next couple of weeks so I thought it was time to dust off the old herbicide recommendations. Again, we don't have anything new labeled for pumpkins or winter squash this year so we need to work with what we've got. As I try to remind everyone, the herbicides we do have labeled all work best as post plant, pre-emergent applications. They are mostly seed germination inhibitors or root inhibitors and in some cases they do have some post-emergent activity. In my opinion, there are three important factors for these herbicides to work their best:

**Field preparation:** Fit and plant the field as closely together as possible. Do not fit the field and let it sit for more than 2 or 3 days before planting it as this will allow weed seeds to germinate (if the conditions are right) and in the case of many of these products, their activity and efficacy is reduced when seeds are already germinated. If you have to wait for some reason, I would consider re-fitting the field with a shallow cultivation before planting. Also, make sure the field is not full of clumps as this will also reduce the efficacy of the herbicides.

**Application timing:** As with field fitting, do not delay your herbicide application for more than a couple of days after planting! The same reason applies—this gives seeds time to germinate and reduces their activity. Planting and spraying your herbicide within a day or two will improve weed control.

**Moisture:** All of these materials require either a rain or irrigation after application in order to "activate" them. Not only does this activate the herbicide, but it also activates seed germination. If it looks like there is no rain coming for a while and you don't have irrigation, my suggestion is to go ahead and still get the herbicide on. It's better than waiting for a rain.

Lastly, I would not use any of these products pre-emergent/post-plant by themselves with the exception of Strategy (already has 2 different active ingredients pre-mixed). We have seen that tank mixes are the best value and result in much better weed control. Tank mixes that we think have potential are: Sandea plus Dual Magnum plus Reflex [*Reflex not allowed in MA*]; Sandea plus Command ME or Sandea plus Dual Magnum plus Reflex [*Reflex not allowed in MA*]. As always, please read the label carefully and if you have questions about what you read below, please do not hesitate to call me at 518-859-6213 and I will do my best to answer them. [*Massachusetts growers can call the UMass Veg Program at 413-577-3976*].

**Dual Magnum Notes:** If you have Dual Magnum or Dual II Magnum, you will note that “Pumpkins” are on those labels. However, if you read the Dual II Magnum label, you will see it stated clearly that it is labeled only as a banded application and the applicator must leave a 12 inch area over the seed row untreated. What I would recommend is that you obtain the Dual Magnum 24 c Special Local Needs (SLN) label. The SLN label for Dual Magnum does not have this restriction and it can be used as a broadcast application. However, you need to obtain a copy of the correct 24 (c) label and have it in your possession at the time of application. The use of Dual Magnum in this way is an indemnified label which means that you accept the risk of using this material and any injury or crop loss is not the responsibility of the company. In order to obtain the correct label, you will need to register with Syngenta and indicate that you are using this product on those specific crops. The good news is, this process is simple and can be done via the internet. (More to follow below). And as far as I know, the use of generic “Dual” products is not legal to use on pumpkins or winter squash.

**Registering with Syngenta and obtaining the 24 c SLN:** First, go to [www.farmassist.com](http://www.farmassist.com) where you will need to create a user name and password. Once logged in, select “Products” where a dropdown menu will appear. Under that, select “Indemnified Labels”. Next, select “New York” [*In MA, select “Massachusetts”*] under the state and “Dual Magnum” under the “product”. It is very important to note here that only the Dual Magnum formulation is labeled on pumpkins and winter squash and not Dual II Magnum. Then the list of Dual Magnum indemnified labels comes up and you need to find the appropriate one (should be the one that included pumpkins and winter squash). [*When you select ‘MA’, pumpkin appears in the drop down menu, but winter squash does not. However, if you open the label, you will find both pumpkin and winter squash listed among the crops*]. Click the crop you are applying it to and the “submit” button. You will then be navigated to a “WAIVER OF LIABILITY AND INDEMNIFICATION AGREEMENT” page where you will either accept or decline the special instructions for using this product on the selected crops. If you accept it, the label you need to print will appear as a pdf file, and you can then print it and you are ready to go. If you decline it, the labels will not appear and you legally cannot apply Dual Magnum to the selected crop. The good news is that Farmassist will save all of the indemnified labels you have agreed to in case you lose your label and need another one. If you need assistance, you can call the Syngenta Customer Resource Center at 866-796-4368. Remember, you need to have a copy of the 24 (c) label in your possession when using this material.

Product	Labeled crops	Weeds controlled	Rate	Comments
Sandea, Profine 75 (halosulfuron)	All cucurbits	Broadleaves (pigweed, velvetleaf, etc.)	0.5 1.0 ounces per acre	Can stunt and delay emergence especially at higher rates (I recommend 0.5 oz rate) but temporary, short residual of about 4 weeks, will start to see some weed species breaking through (common lambsquarter, Eastern black nightshade) around the 4th of July. Using a 0.5 oz. once pre-emergent allows you to use a another 0.5oz. once post emergent, needs to be mixed with a grass herbicide when used pre-emergent.
Dual Magnum	Pumpkins, winter squash,	Mostly grasses and some broadleaf suppression	2/3—1.33 pints per acre depending on soil type	PLEASE SEE OTHER NOTES ON DUAL MAGNUM! I have seen very good results and limited injury using the 1.0 pints per acre rate. <u>Do not incorporate</u> as this increases the risk of severe injury! Best if used as a post plant pre-emergent and can be used post transplant within 72 hours of planting (weed seed germination issues).

Command 3ME	All cucurbits	Annual grasses and some broadleaves	2/3 – 1.33 pints per acre depending on soil type	Labeled on all cucurbits (Label actually says “Do not use on Jack-O-Lantern pumpkins” because the companies distributing this product will not accept liability for potential off-color responses that have been observed in numerous varieties). I find that the 1.0 pint per acre rate is used and provides good control. Do not incorporate! The ME (micro-encapsulated) formulation does not need to be incorporated! May be used prior to seeding or transplanting (make sure transplant is planted below the chemical barrier) or post seeding but before crop emerges.
Curbit EC	All cucurbits	Mostly annual grasses and some broadleaf suppression	3.0—4.5 pints per acre depending on soil type and organic matter level	Use as a as a post plant pre-emergent application only within 2 days of planting or banded application between rows after crop emergence or transplanting (be very careful of drifting onto the crop). Do not use under plastic mulches or rowcovers. Cold, wet soils can increase injury or even result in crop failure! Label recommends using a minimum of 20 gals/acre fixed spray volume. Do not incorporate as this will increase the chance of injury.
Strategy (Pre-mix of Command and Curbit)	All cucurbits	Most annual grasses and some broadleaves	2.0 - 6.0 pints depending on soil texture	Do not incorporate, recommended as a post plant pre-emergent or banded application between rows after emergence or transplanting. Do not broadcast apply and then transplant into treated soil as severe injury will occur. It can also be banded to row middles after a cultivation. Again, do not let this material freeze in storage as it could potentially settle out and clog your sprayer screens, tips etc. If it has frozen, be sure to contact the manufacturer for recommendations of how to proceed. Label also recommends to use 10 to 30 gallons per acre finished spray volume. Be sure to check the label as there are crop rotational restrictions that are rate dependent.
Reflex** **Not registered in MA	Pumpkins and winter squash except butternut	Broadleaves and some annual grass suppression	0.5—1.0 pints per acre	24 c Special Local Needs label [New York only, not MA] on pumpkins, summer squash and most varieties of winter squash, except butternut. “Indemnified” label like Dual Magnum which means you accept any crop loses associated with using this material and you will need to register with Syngenta in order to print a copy of the label. See the “Registering with Syngenta and obtaining the 24 c SLN” section under Dual Magnum. For direct seeded crops you need to apply to the row middles only or leave the area over the seed furrow untreated. Do not use as a broadcast application on direct seeded pumpkins or squash! However, for transplants you can use it as a pre-transplant non-incorporated pre-emergence (weed seeds) broadcast application up to 7 days prior to transplanting. Apply Reflex at a rate of 0.5—1.0 pints per acre. Do not exceed 1 pint per acre of Reflex on pumpkins, winter or summer squash per season and do not harvest any of these crops within 32 days of the Reflex application. Please note the 18 month crop rotation restrictions for sweet corn. Do not use Reflex alone.

--by Charles Bornt, Cornell University, Eastern New York Commercial Horticulture Program (ENYCHP)

# **EVENTS**

## **Hands on Biological Controls Workshop for Greenhouse Growers**

**When:** Thursday, June 22, 2017 from 8:45 am to 3:30 pm

**Where:** Floriculture Classroom 101, UConn Floriculture Greenhouses, 1395 Storrs Rd, Unit 4067, Storrs, CT 06269

In this hands-on biocontrol workshop, you'll learn about: Quality assessment of biological control agents in the classroom and with hands on activities. You will receive a color copy of Grower Guide: Quality Assurance of Biocontrol Products compiled by Rose Buitenhuis, PhD, Research Scientist, Biological Control, Vineland Research and Innovation Centre, 2014 for your reference, and we will follow along the steps in this manual. Greenhouse Demonstrations, including use of cutting dips, sachets, thrips banker plants, and supplemental foods for beneficials and discussion of costs and benefits will be held.

Featured speakers include:

- Suzanne Wainwright Evans, Buglady Consulting
- Doug Barrow, Biobest
- Debbie Palumbo-Sanders, Bioworks
- Shelley Durochuer, UConn Floriculture Greenhouses

Space is limited, so be sure to register early! Registration Deadline is June 16th! Final lunch count is needed by the caterer!

For more information, contact Leanne Pundt, UConn: [Leanne.pundt@uconn.edu](mailto:Leanne.pundt@uconn.edu) or call 860-626-6855.

## **Water Management Twilight Meeting**

**When:** Wednesday, June 28, 2017 from 4pm-6pm with dinner to follow!!

**Where:** Tangerini's Spring Street Farm, 139 Spring St, Millis, MA 02054

FSMA and drought got you down? Come to this Twilight Meeting at Tangerini Farm in Millis, MA. Tour the newly installed irrigation system for orchard and vegetable crops built with funding support from NRCS with the designer, Trevor Hardy of Brookdale Farm, Irrigation and Row Crop Supply. Find out water sampling protocols and lab requirements for FSMA from the UMass Food Safety Specialist Lisa McKeag and about grant opportunities for irrigation and food safety improvements. Other industry representatives will be available for consultation and **dinner will be provided** following the tour.

**We will cover:** irrigation water sources, sampling for FSMA requirements, ins-and-outs of drip irrigation, overhead irrigation in corn, strawberry and direct seeded crops, irrigation under FSMA, and orchard irrigation.

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*Vegetable Notes. Katie Campbell-Nelson, Lisa McKeag, Susan Scheufele, co-editors.*

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