UMass Extension
Vegetable Notes
For Vegetable Farmers in Massachusetts since 1975

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In this issue:

Katie Beltaire, UMass Vet & Animal Science Dept, taught us about the cows at the UMass Research Farm at this Tuesday's 4H event. Photo: S.B. Scheufele

Crop conditions

More storms this week brought sudden heavy rains and strong winds causing lodging in some crops like sweet corn and peppers. Lodged peppers become susceptible to sunscald when they were suddenly exposed to the bright sun. Some growers have started trellising their peppers to avoid this issue and give these sometimes weak plants a little extra support. The last sweet corn plantings are seeded, cantaloupes and watermelons are coming in with force, peppers are starting to turn color, and field tomatoes are really cranking—just in time for the Annual Tomato Contest coming up on August 27th. Onion harvest is underway in many fields now—see article this issue for harvest and curing tips.

We're taking some time this month to do some education and outreach with growers and the community at large. This past Tuesday we opened up the gates of the UMass Crop and Animal Research Farm to kids and their families through a collaboration with the UMass Extension 4H-Youth Development Program. No surprises, our cucumber variety trials were not as exciting to the group as the cow herd (including seven baby belted Galloways!) that the Vet and Animal Science Department uses to teach cattle herd management! This weekend we will be at the NOFA-MA Summer Conference, hosting a scouting workshop at the Hampshire College Farm and talking about winter greens production and diseases. On August 20th we will be hosting our annual research farm tour for growers—check the Events section lising to RSVP, and hope to see some of you there!

Pest alerts

Alliums:

White rot (*Stromatinia cepivora*) was diagnosed this week on garlic in Franklin Co., MA. This soil-borne, fungal disease affects garlic and onions and is spread by garlic seed and/or soil infested with mycelia and sclerotia—tiny black structures that can survive in soil for up to 40 years. Soil temperature is the greatest factor contributing to disease spread; germination of sclerotia is very slow at 48°F, is stopped above 70°F, and is rapid at 57-64°F. Ideal moisture levels for disease development are the same as for crop growth. Infection causes yellowing and wilting of leaves just before scapes emerge while damage to bulbs includes rotting of root and basal plate. Small black sclerotia form in and within the bulb and white mycelia grows around the soil line. Limit introduction of new seed onto your farm if possible, and purchase seed from trusted sources. Discard any seed which is visually diseased. It is also important to limit the movement of soil onto your farm, e.g. through sharing uncleaned cultivation or harvesting equipment. Techniques to reduce white rot sclerotia in soil include biofumigation with brassica cover crops, solarization, use of some biofungicides, and stimulating germination of sclerotia using garlic powder or composted onion waste—for more info see this factsheet by Crystal Stewart, Cornell Cooperative Extension.

Garlic bloat nematode was diagnosed on 'Porcelain' garlic in Franklin Co., MA. GBN can infect garlic, onions, chives, as well as other bulbing plants including irises, celery, and hairy nightshade. Stunting, distortion, yellowing, wilting, and premature dieback of leaves may be among the first symptoms observed. Swelling and distortion of bulbs and stems are characteristic. Infected bulbs are light in weight and shrunken, dark brown, and soft. Tissue death

predisposes bulbs to colonization by soft rot bacteria and saprophytic fungi. Roots may be partially or completely absent from part of the basal plate. Do not sell seed garlic that is known to be infested. Buy seed garlic from reputable sources and ask if their seed has been tested for GBN. Avoid planting alliums in fields with a history of GBN. Rotate out of alliums and other known host crops for at least 4 years. Control weeds, as some species may harbor GBN.

Brassicas:

Cabbage loopers were seen in western MA, adding to the already significant damage being caused by diamondback moths and imported cabbageworms. We suspect cross-striped cabbageworms will also be emerging soon, so now is an important time to be scouting fall brassicas and spraying when thresholds are reached.

Flea beetles: Ever present, flea beetles continue to be seen in high numbers in fall plantings of transplanted crops, radishes, and turnips.

Black rot is spreading in fields across the region. Controlling flea beetles is an important component of managing this bacterial disease, which can be spread from plant to plant by insects, as well as being spread by splashing water.

Club root was found in a planting of cabbage and collards on a farm with a history of the disease in Worcester Co., MA. Plants were stunted, yellowed, and wilted. When plants were dug up, roots were swollen and deformed. On crops with fleshy roots such as radish and turnip, galls form on the taproot or secondary roots. The disease is usually more severe on cold, wet, acidic soils and is spread by drainage water, infested soil on equipment, tools, or shoes, and infected transplants. Resting spores remain viable in the soil for up to eighteen years and the repeated production of brassica crops can lead to a rapid build-up of the pathogen. The disease is favored by soils with a pH less than 7.0.

Cabbage root maggot larvae were found causing damage to roots of transplanted fall brassicas and subsequently plants were stunted, wilted, and discolored. Root maggots are not usually an issue during the summer because the hot soil kills eggs and larvae. Perhaps in cool, wet soil where flooding occurred after heavy rains, the insects survived and caused damage. There will be another generation of root maggots laying eggs in early September, causing damage to root crops like radishes, turnips, and rutabagas. Track progress of adult flight at: http://newa.cornell.edu/index.php?page=cabbage-magot.

Cucurbits:

Downy mildew was reported on butternut squash in Rhode Island this week, following this week's storms that put all of southern New England at high-risk for spread of the disease. Downy mildew is likely to start showing up soon in other parts of the region in winter squash as well as cucumbers, pumpkins, and cantaloupe. **Powdery mildew** is also spreading throughout cucurbit plantings now. Here are direct links to Meg McGrath's updated fungicide recommendations for managing multiple cucurbit diseases:

- Downy mildew Recommendations
- Powdery Mildew Recommendations
- Phytophthora Blight Recommendations

Plectosporium was diagnosed this week on zucchini from Franklin Co., MA. This relatively new disease also affects summer squash, pumpkins, and some varieties of gourds. It causes small white cigar-shaped lesions on leaves and stems and round lesions on fruit, which can coalesce to form a white, tan, or silver russeting. The pathogen overwinters in crop residues in the soil and disease is favored by warm, wet weather. Practice a two-year crop rotation. Protectant fungicides will control *Plectosporium*; thorough coverage is necessary for good control.

We are continuing to get reports of **collapsing squash plants** across the region. This can be caused by several factors including **squash vine borer** larvae feeding in plant stems, **bacterial wilt,** which has been seen causing bases of plants to rot near the soil line, and **drought stress**. Controlling striped cucumber beetles early on, and squash vine borers in late-July and early-August can help prevent these problems, as well as maintaining adequate watering. **Squash bugs** are also contributing to overall poor health of squash, causing Anasa wilt and leaf dieback—control the nymphs that are active now because they are much easier to kill than the adults.

Solanaceous:

Two-spotted spider mites are being observed in eggplant in the field. These mites often cause problems in cucurbits as well and are especially damaging to high tunnel tomatoes and cucumbers. See article this issue for more info and control recommendations.

Broad mite damage to pepper plants and fruit is being reported across the region. Symptoms including deformation of leaves and fruit may resemble virus symptoms. See article this issue for details and control recommendations.

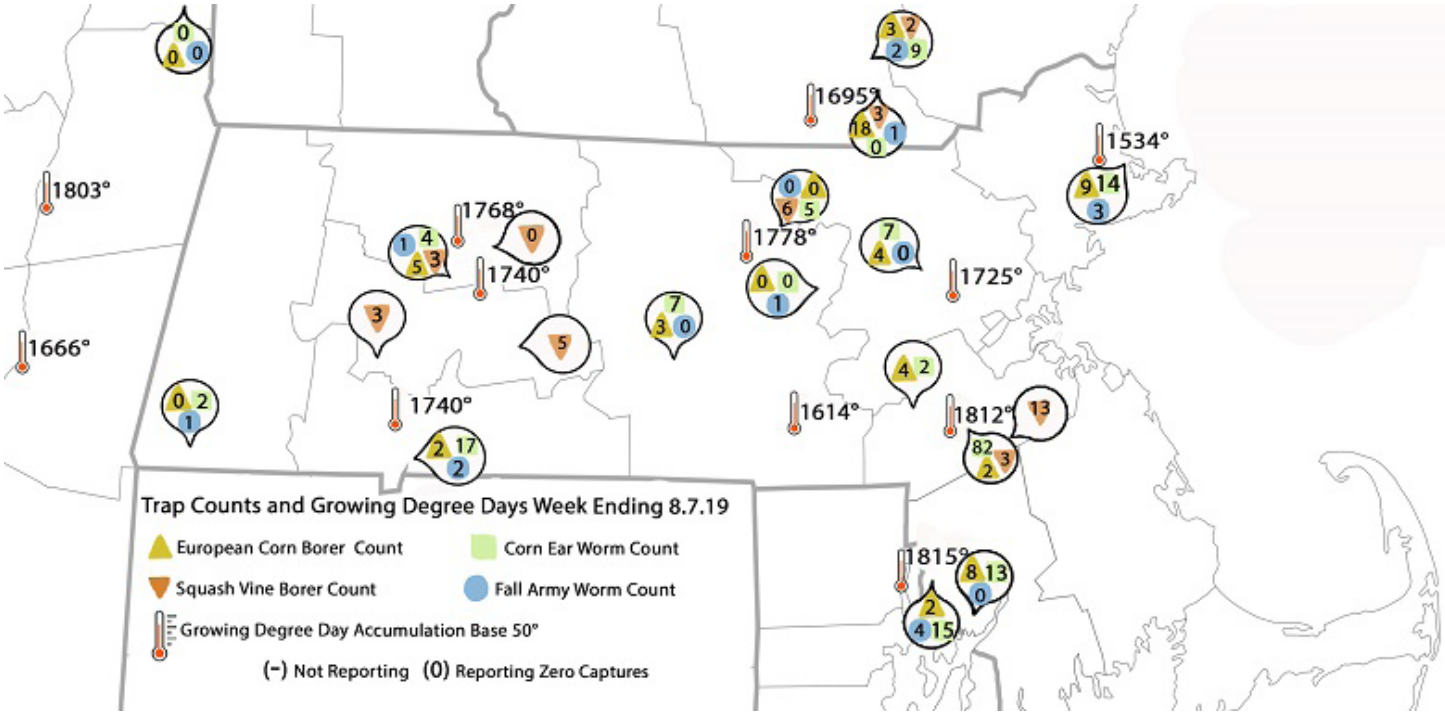
Pepper silvering.
Photo: A. Radin

Herbicide injury suspected in pepper and tomato: We've had two reports of suspected herbicide injury from contaminated compost in solanaceous crops in the region this summer. In both cases, plants looked normal for about 1 month and then began displaying twisted and elongated growth and overall stunting. Some herbicides, especially the pyridine and pyrimidine subgroups within group 4 growth regulator-type herbicides can cause this kind of damage. Common herbicides in this group include: Stinger, Milestone, Lontrel, Starane Ultra, Tordon 22K, Garlon 3A or 4, Remedy Ultra, and Method 240SL. These broadleaf herbicides are commonly used in hayfields to clean up broadleaf weeds. They retain their activity even after composting and therefore residues can be present in composted horse manure and straw or grass used as mulch. If you suspect herbicide carryover injury, you can plant beans into leftover compost to see if similar symptoms develop, as beans are very susceptible to this injury.

Suspected herbicide injury in peppers.
Photo: S. Ghimire

Silvering/skin separation: We heard a report from Rhode Island this week of peppers exhibiting silvering, or skin separation. This is a cosmetic disorder affecting certain varieties of pepper. The skin is intact on the surface of the fruit and the walls are not softened but discoloration may lead to reduced marketability. Research conducted at Rutgers University has demonstrated that variety is the major factor contributing to this defect and varieties bred for resistance to *Phytophthora capsici* (e.g. Paladin and Aristotle) seem to be more susceptible.

Blossom end rot is still developing in tomatoes and peppers as a result of calcium deficiency in fruit tissues under dry soil conditions. Maintain regular irrigation of these crops to allow for uptake of calcium from soils.



Sweet Corn:

European corn borer trap counts are low and sporadic throughout the area. Treating corn at tassel will help to minimize damage from this pest. Any sprays made earlier for fall armyworm or at the start of silk for corn earworm will also control ECB.

Fall armyworm: Most damage and infestation that we are seeing now in the field is FAW in late whorl/pre-tassel stage corn, though trap counts for FAW are still low. Whorl-stage corn is particularly at risk from this pest. Treatment is recommended when 15% of the plants in a 50-plant sample are damaged or infested.

Corn earworm trap counts remain high, in the double digits on farms in Norfolk and Bristol Cos., MA. A 5-6 day spray schedule is recommended in silking corn in most of the state but should be tightened to 4 days where trap counts are 7/week or higher. Growers should not solely rely on pyrethroids to manage for CEW; include a material like Lannate, Radiant, Coragen, or Blackhawk to improve control.

Bird damage is an issue this time of year and can be extremely frustrating to manage. One new technique being trialed around the region is using lasers to scare birds out of corn fields. See the results of a SARE Farmer Grant study conducted last year by Elliot Farm in Lakeville, MA on the project website here.

HARVEST AND CURING TIPS FOR ONIONS

Deciding when and how to harvest onions, then where and how to cure them can be challenging. When are they really ready to be pulled? Is the weather too wet or too hot to field cure? How did my onion field get so weedy? What should I do if there is a lot of foliar disease in my crop Here are a few tips from University of Minnesota Extension we found helpful to accompany our usual onion harvest article:

Harvest: Optimum harvest from the standpoint of maximum storage life (before bulb sprouting), occurs while the onion foliage is still partially (30-40%) erect, and long before maximum yield is attained (when tops are completely down and dry). Since yields may increase 30-40% between the stage when tops begin to go down, and the leaves are fully down and dry, it is tempting to leave onions to cure in the field as long as possible. The optimum time for harvest therefore, must be a balance between highest yields and reduced bulb storage quality. Furthermore, excessively field-drying onions increases the risk of bald onions in storage. From UGA Extension: http://bit.ly/2hOqy9I: "Maturity is best determined by pinching the neck of the growing onion. Necks of immature onions are stiff, while necks of optimally mature onions are soft and limber. When the necks are so weak that they cannot support the tops, the onions are over-mature. Simply observing the percentage of tops having fallen over is not a true indication of maturity, since the tops can be knocked over by strong winds, rain or become limp from lack of moisture."

Fig. 1. Proper lodging on onions. Photo: C. Hoepting

Digging and windrowing: To facilitate curing onions for harvest and storage, onion rows are undercut, lifted and windrowed for field curing. Rod-weeder diggers and knife undercutters are most often used. After an appropriate interval, the undercut onions are lifted and windrowed. This may be done with tops on or off, but most commonly with tops on to protect the onions form sunscald damage. Windrows are often mechanically "fluffed" to facilitate curing and later combined to facilitate loading. This will also shorten the drying period and should be done after each rainfall. After field drying has occurred, the onions may be topped and placed in storage buildings.

Topping: If onions are to be bulk-stored it is best to store them without their tops. This facilitates handling, loading and unloading the storage. If onions are to be topped and stored, tops must be totally dry, or only the dry portion cut and removed. Cutting through any portion of the top while it is still green or moist may result in excessive *Botrytis* neck rot in storage. In very wet years, do not top onions until after they have been cured. When all or a

portion of the onion top is left on, the remaining tops are removed during grading and packing using roller toppers at the storage or packing facility.

Curing: Onions should be adequately cured in the field, in open sheds, or by artificial means before or in storage. Adequate curing in the field or in open sheds may require 2 to 4 weeks, depending on the weather. The best skin color develops at 75 to 90°F. This should be continued until the outer skins and neck are dry. Onions are considered cured when the neck is tight and the outer scales are dry and make a rustling sound when handled. This condition is reached when onions have lost 3 to 5% of their weight. If not adequately cured, onions are likely to decay in storage. The common form of decay is gray mold rot (*Botrytis*), which occurs at the top of the bulb - hence its name "neck rot". High temperatures and high humidity (80%) during curing with good air circulation favor development of desirable skin color.

Here are our low-tech recommendations for curing and storage in New England: A greenhouse or hoophouse provides a good environment for curing, where temperature, airflow, and moisture can be controlled. Be sure to keep the temperature in the house **below 85°F**, which will probably require turning on fans and/or leaving sides and doors wide open—consider using a black shade curtain over the house to help moderate temperature. Curing can be done in the field, but it is harder to achieve good conditions for curing in an uncontrolled field setting. Avoid field-curing onions if rain is forecasted and, if it does rain, let the onions dry fully before handling—don't handle the bulbs when they are wet. If the field is weedy, it may be excessively moist and air circulation may be limited; these conditions are not suitable for curing. Temperature and sun are also factors to consider—sunshine and temperatures in the 80s will enhance the bronze color in the skins, but extremely hot sun and temperatures in the 90s can cause sunscald. Onions curing on a sandy soil will heat up more quickly than those curing on a heavier soil.

Topped and cured onions are brought into a well ventilated barn to bring them down to temperature slowly for storage. Photo: R. Hazzard

Storage: To ensure maximum storage life, onions must be promptly stored after curing. Get them out of the sun as exposure to light after curing will induce greening of the outer scales. The optimum temperature for long-term storage of onions is 32°F with 65-70% relative humidity, but it is important to bring them down to this temperature slowly. In fact, holding onions in a barn or garage so that they cool along with the average outdoor temperature in late-summer and fall works quite well. Avoid cooling bulbs to well-below the average daily temperature because they will draw moisture from the warmer air, which can lead to disease. If you are selling the onions within a couple of months, keeping them in an uninsulated barn is fine. An insulated storage room is needed for longer-term storage.

Harvest Tips for Best Quality

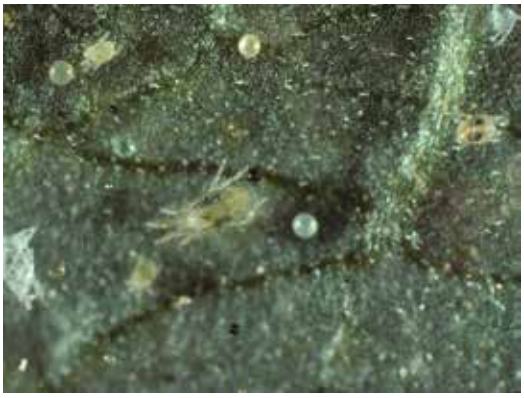
1. **Be sure onions are well-dried and necks are tight** (i.e. the tissue does not slide when you roll the neck between your fingers) before topping. Bacterial diseases and Botrytis Neck rot can move through green tissue into the bulbs. These diseases do not move in dry tissue.
2. **Leave 2-3 inches of neck on the bulb.** This increases the distance from the cut surface to the bulb for these pathogens to travel.
3. **Minimize mechanical injury during harvest & topping.** Reduce drops to 6" and pad sharp surfaces. Bruises provide direct entry points for diseases to get started.
4. **Grade out damaged onions before putting them into storage.** Damaged bulbs give off moisture, which is favorable for development of diseases in storage.

--Written by John Howell, Andrew Cavanagh, & Ruth Hazzard. Updated by S.B. Scheufele

MITES IN SOLANACEOUS CROPS

We are beginning to get reports of mite infestations in solanaceous crops across the region. Both broad mites and two-spotted spider mites (TSSM) affect solanaceous crops—broad mites are the most heavy hitting on pepper, and TSSM are

particularly devastating on eggplant and tomato, though they can both affect a variety of crops, including tomato, eggplant, potato, beans, and vine crops such as melons and cucumbers.



Adult, eggs, and nymphs of two-spotted spider mite. Photo: D. Ferro

Two-Spotted Spider Mite

TSSM are favored by hot, dry, and dusty conditions, which also aggravate mite injury by stressing the plant. Damage is often underestimated since both the mites and the wounds they cause are difficult to see without inspecting plants closely, or until the problem becomes widespread.

Description. Adult females are tiny—about a ½ mm long—slightly orange to pale green in color, with two dark spots on their body. They are visible with the naked eye but a 10x hand lens is helpful to see them. Initially, mites will feed on the undersides of leaves but in heavy infestations, they will move to the tops of leaves and onto fruit. Large populations will produce visible webbing that can completely cover the leaves. Mites hide under the webbing, making them difficult to reach with sprays.

White spotting on eggplant foliage caused by two-spotted spider mite feeding. Photo: J. Boucher

Life cycle. All mobile life stages—adults, larvae, and nymphs—can feed on plant tissue. Eggs are laid singly, up to 100 per female, during her 3- to 4-week life span. Eggs hatch into larvae in as few as 3 days. Following a brief larval stage, several nymphal stages occur before adults appear. The egg-to-adult cycle can be completed in just 7 to 14 days, depending on temperature, leading to explosions in mite population and damage.

Damage. Adult TSSM feed by sucking chlorophyll out of the leaves, creating blotchy yellow to reddish-brown spots. Feeding injury often gives the top leaf surfaces a mottled or speckled, dull appearance. Leaves eventually turn yellow and drop. Other symptoms include distorted leaves, overall loss of plant vigor, whitening or spotting of leaves, or abnormalities on stems and fruits. On tomato, mites can damage fruit, causing small whitish spots that render fruit unmarketable.

Broad Mite

Broad mites also have a very wide host range, including many weeds and ornamentals, but cause the most damage within the solanaceous family and are especially damaging on pepper. The source of broad mite infestations in vegetable crops is often ornamentals from greenhouses or high tunnels where vegetable transplants were grown. Adult broad mites are even tinier than TSSM—only 0.02 mm. They're notoriously tricky to find, even on severely symptomatic plants. Similarly to TSSM, broad mites reproduce very quickly; their life cycle takes only 7 to 8 days at 85°F.

Broad mite damage on pepper: distored leaves and gray scar tissue on fruit. Photos: S. Ghimire

Broad mites differ significantly from TSSM in their feeding habits and damage. Broad mites feed in the growing tip, and inject a toxin as they feed that causes the growing tip to become distorted or die. Plants

become severely stunted and twisted and fruit develops an unmarketable gray scar tissue. While plants infested with TSSM can recover from feeding damage after the pest has been controlled with pesticides, plants will not grow out of broad mite damage. Early in an infestation, if only a few plants are heavily infested, pull and bag those plants and treat the remaining plants.

Cultural control. Outbreaks may be worsened by excess nitrogen fertilization, or by the use of broad-spectrum insecticides that kill naturally occurring mite predators. Overhead irrigation or prolonged periods of rain can help reduce populations. Keep weeds under control. Control broad mites in ornamentals if you grow ornamentals and vegetable transplants in the same structure.

Biological control. Preventative releases of the predatory mite, *Phytoseiulus persimilis*, may suppress TSSM populations in vegetable fields, as they do in strawberry fields. *Amblyseius fallicis* is a predatory mite that is widely used in greenhouses. See the New England Vegetable Guide section on biological control in greenhouse bedding plants for more information.

Chemical control. Early or preventative control is essential for controlling both broad mites and TSSM, as populations can explode quickly. Use selective products whenever possible. Selective products which have worked well in the field include:

- Agri-Mek (Group 6, 7d PHI): abamectin, derived from a soil bacterium. TSSM & BM. Must be mixed with non-ionic activator type wetting, spreading,and/or penetrating adjuvant.
- Acramite (Group 25, 3d PHI): bifenazate, a contact nerve poison with a long residual. TSSM only.
- Movento (Group 23, 1d PHI): spirotetramat. Active primarily by ingestion. Systemic. Labeled for control of BM and suppression of TSSM in solanaceous crops. Mainly affects immature stages.
- Oberon 2SC (Group 23, 1d PHI for solanaceous, 7d PHI for cucurbits): spiromesifen. Mainly affects immature stages.

Two other selective products are:

- **Kanemite** (Group 20B, 1d PHI): acequincyl. TSSM only. Knockdown and residual control.
- **Portal XLO** (Group 21A, 1d PHI): fenpyromixate. TSSM & BM. Stops feeding immediately after application. Mites die in 3 to 7 days.

OMRI-listed products include insecticidal soap (M-Pede) and horticultural oils (e.g. Trilogy, Suffoil X, and Golden Pest Spray Oil). These can be effective, especially if utilized early and regularly and with good leaf coverage. The bioinsecticides Met52, Grandevo, and Venerate (all 0 PHI) are also labeled.

See the appropriate crop sections of the New England Vegetable Management Guide for more details, including resistance groups.

With most miticides (but not bifenazate, which has a long residual), use 2 applications approximately 5 to 7 days apart to help control immature mites that were in the egg stage and protected during the first application. Because mites reproduce so quickly, populations can easily develop resistance to products; alternate between products after 2 applications to help prevent or delay resistance. Check product labels for specific use restrictions.

--Compiled by Genevieve Higgins, UMass Extension

Sources:

Watch for Spider Mites in Eggplant, Tomato, and Vine Crops, Ruth Hazzard, UMass Extension

Two Spotted Spider Mites on High Tunnel Vegetables, Gale Hermenau, Delaware Weekly Crop Update, June 21, 2019

Significant Crop Losses on Pepper Due to Broad Mites, Judson Reid, Cornell VegEdge, August 7, 2019

Broad Mites in Fruiting Vegetables, Steve Bogash, Penn State Extension

Syrphids, and Lacewings, and Wasps, Oh My!

One of our cucumber field trials has been overrun by melon aphids this summer, with some plots being reduced to sticky piles of leaves with a carpet of aphids coating the undersides—very gross. What's the upside of this? Getting to see all the beneficial insects moving in take advantage of the aphid buffet. All of the beneficials seem to have contained the aphids to the plots where the outbreak initially started. After the aphid population initially exploded, it has not spread to other plots. Here's some pictures of what we saw the other day. Photos: G. Higgins.

Lady beetle larvae (right) and adults both feed on aphids. We seem to have a happily growing population...!

Syrphid fly larva (white arrow), aphid mummies (purple arrow), and midge larva (red arrow). Syrphid and midge larvae both feed on aphids. Aphid mummies are aphids that have been parasitized by a wasp parasitoid. If an aphid mummy has a round hole in it, the new wasp has already emerged!

Lacewing adults (bottom) lay their eggs on hair-like stalks, often in rows on undersides of leaves. Larvae feed on aphids (middle). Egg photo: D. Cappaert, Bugwood.org

NEWS: MASSACHUSETTS TOMATO CONTEST TO BE HELD ON TUESDAY, AUGUST 27TH

The 35th Annual Massachusetts Tomato Contest will be held in the KITCHEN at the Boston Public Market on Tuesday, August 27th. Tomatoes will be judged by a panel of experts on flavor, firmness/slicing quality, exterior color and shape. Four categories: Slicing, Cherry, Heirloom, as well as Heaviest! Always a lively and fun event, the day is designed to increase awareness of Massachusetts grown produce.

Farmers who will join us in Boston can bring tomatoes to the market between 9:00 am and 10:45 am on Tuesday, August 27th, or can drop tomatoes off with a registration form to one of the **drop off locations on August 26th**. These tomatoes will be brought to Boston. For the complete details, including drop off locations, contest criteria and a registration form, **click here**.

Can't make it to Boston? Drop-off your tomatoes at one of the regional drop-off locations in Great Barrington, West Springfield, Worcester, Topsfield or North Easton on Monday, August 26th.

The 35th Annual Tomato Contest is sponsored by the Massachusetts Department of Agricultural Resources, New England Vegetable and Berry Growers Association, and Mass Farmers Markets in cooperation with the Boston Public Market and The Trustees.

EVENTS

2019 UMass Vegetable Program Research Tour

Join us for an evening learning about the research being conducted this year at the UMass Research Farm, followed by dinner. Stay posted for an agenda in a few weeks!

When: Tuesday, August 20, 2019, 4-7pm

Where: UMass Crop and Animal Research & Education Farm, 89 River Rd., South Deerfield, MA

REGISTRATION: Please RSVP for food ordering. Click here to register for this event.

Vermont Vegetable & Berry Growers Association On-Farm 2019 Workshop Series

The Vermont Vegetable & Berry Growers Association is holding a series of nine on-farm workshops from June through November this year. For more information on all workshops in this series, please click the linked event title above.

Attendance at these events is free for members of the Vermont Vegetable & Berry Growers Association. The cost is $10 per-person for non-members, payable on-site. Refreshments will be served. Membership in the VVBGA costs $55 per farm, per calendar year. The VVBGA works with University of Vermont Extension to deliver education and applied research for its growers.

Tuesday, August 20, 4-7 pm. HeartLand Farms, 74 Gibson Rd., Hartland VT 05048. Join Brian Stroffolino for a tour and discussion of permaculture and no-till techniques on his hillside farm that has 2 acres of veggies, 1.5 acres of fruit, nuts, and berries, and a couple of high tunnels for overwintering seed crops. He produces for farmers' market and some local buyers, but is shifting to seed saving of vegetables, grains and herbs with sales through an online catalog Solstice Seeds that focuses on rare, diverse and resilient varieties. UVM Extension's Laura Johnson and Becky Maden will be present to discuss reduced-till techniques and how to manage nutrients in this unique scenario.

Questions? Contact Vern Grubinger, 802-257-7967 x303. To request a disability-related accommodation, contact Dana Rupert, 802-257-7967, three weeks prior to an event so we may assist you.

THANK YOU TO OUR SPONSORS:

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

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