UMass Extension
Vegetable Notes
For Vegetable Farmers in Massachusetts since 1975

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In this issue:

Crop Conditions
Pest Alerts
Potato Leafhopper Active in Potatoes, Eggplant, and Beans
Celery Anthracnose: The Leaf Curl Disease
Manage Sweet Corn Pests Through Scouting & Pheromone Trapping
Events
Sponsors

Tassels have emerged! It's been a slow spring, but the earliest sweet corn is tasseling and silking now. Photo: G. Higgins

Crop conditions

We have had some perfect growing weather this week—sun, followed by ½" of rain, and daytime temperatures in the 70s. This weather pushed many crops to harvest. Lettuce is in abundance, with multiple successions coming in at the same time. Summer squash and zucchini harvests have picked up, and spring brassicas are rolling in. Cabbage harvest has started, folks are pulling garlic scapes, and the strawberry picking is plentiful.

'Farmers after five'—there is a whole category of farmers with day jobs who start their farm work after they get home. In the twilight hours, dozens were hopping on tractors this week in Hadley, MA to cultivate, harvest, sidedress, seed, and so on. Often a family affair, I overheard a young boy say, "No leafminers in our spinach this year!" Good observation, kiddo! Want a job in Extension? Another farmer shared a piece of folklore while I was scouting a field of poorly germinated winter squash—"When the turtles lay their eggs in our lawn, we know it's time to plant winter squash." But this year, the cool nights may have inhibited germination, and seed planted deeply sat longer than it usually does.

Want to come chat with other farmers next week? On Tuesday, June 25th, we are hosting a twilight meeting at Indian Head Farm in Berlin, MA. We'll discuss brown marmorated stink bug and spotted wing drosophila management, irrigation, high tunnel fertility, and farm succession planning. Click here to register for this event. Hope to see you there!

Pest alerts

Alliums:

Onion thrips hide in the new growth of onion plants. Photo: UMass Vegetable Program

Onion thrips populations are varying widely between fields, with some above threshold and some with none. Scouting your onion fields to keep track of populations will be well worth your time, as populations can explode quickly. Gently pull apart leaves to scout between them, as thrips tend to hide within the plant during the day and climb up the leaves at night to feed.

Brassica:

Alternaria leaf spot was found on heading cabbage in Hampshire Co., MA this week. This disease can infect plants at a wide range of temperatures as long as there is 12 hours of leaf wetness, which Hampshire Co. certainly had this week. *Alternaria* usually appears first on older leaves and moves up the plant as spores are splashed up by rain or irrigation water. This pathogen survives on crop residue, so till in plantings as soon as harvest is done.

Black leg, not to be confused with black rot, was diagnosed in MA this week on Storage #4 cabbage seedlings. Black leg is caused by fungus *Phoma lingam* (aka *Leptosphaeria maculans*). Symptoms include brown stem lesions with black to purple borders. Lesions elongate over time and will eventually girdle stems. Small fruiting bodies (pycnidia) of the fungus are embedded in the lesions. This pathogen can be seed-borne. If you suspect black leg on your farm,

submit a plant sample to the UMass Plant Diagnostic Lab for diagnosis—if it is suspected on transplants, wait for a diagnosis before planting into a field.

We are now seeing larvae and pupae but not many eggs of **imported cabbageworm** and **diamondback moth** in brassicas. For leafy brassicas or heading brassicas after head formation, treat when 15% of plants have at least 1 caterpillar. Before head formation, treat when 35% of plants have at least 1 caterpillar. Bt products XenTari (*Bt aizawai*) and Dipel (*Bt kurstaki*) work well against all caterpillars, will not kill your beneficial insects, and are OMRI-approved. Both must be ingested by the pest. Apply in evening or early morning, before larvae are actively feeding. Coverage and efficacy will improve with use of an approved spreader-sticker. Use high rate at cool temperatures. For resistance management, use XenTari and Dipel in rotation with each other. See the New England Vegetable Management Guide for more pesticide recommendations.

Black leg on a cabbage transplant—note the girdling lesion on the lower stem. Photo: A. Madeiras

Cucurbits:

Squash vine borer has emerged in MA. Expect egg laying to commence. Two locations reported one moth each this week—one in eastern and one in western MA. All other traps in MA and NH are still reporting 0 (see map below). Treatment threshold is 5 moths in the pheromone trap per week on bush varieties and 12 moths per week on vining varieties.

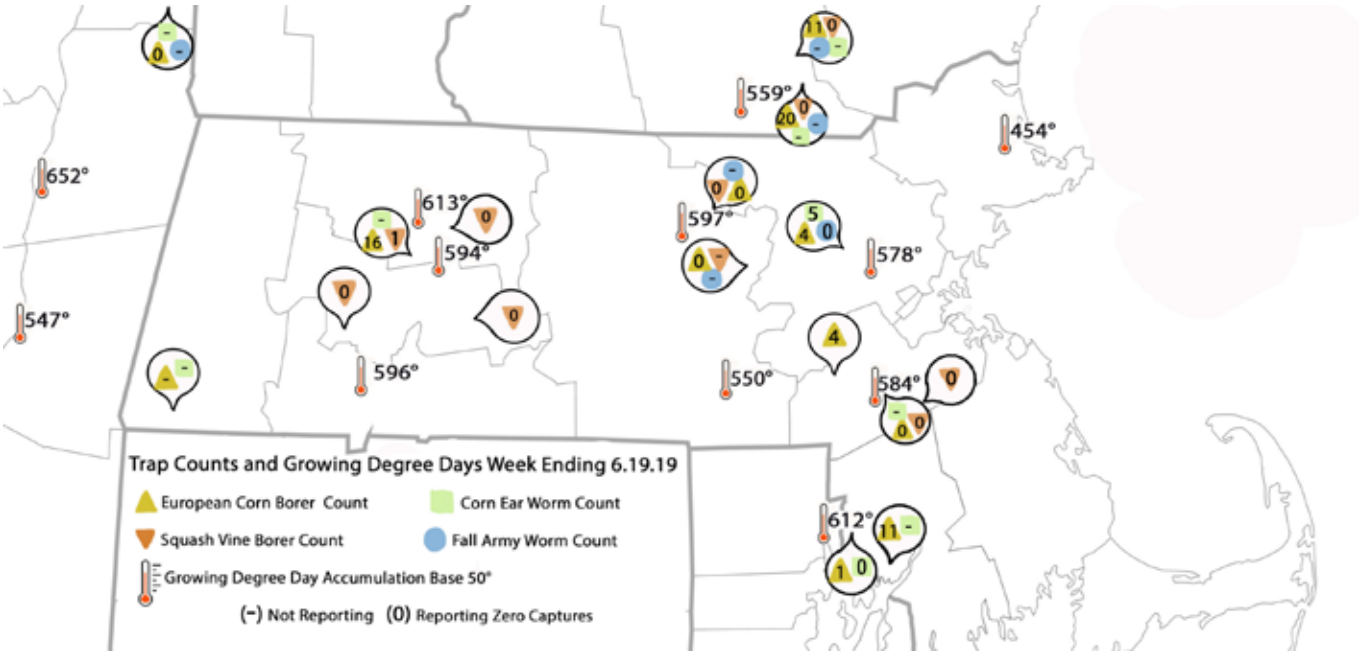
Tomato:

Bacterial canker was diagnosed in Rhode Island this week and has been diagnosed in several VT high tunnels this season already. This pathogen can be seed-borne and can survive on plant debris and contaminated tomato stakes. Infected plants may wilt even when there is adequate soil moisture. Leaf margins may appear scorched and adventitious roots often develop on stems. Cankers develop inside stems. For management recommendations, please see the New England Vegetable Management Guide.

Leaf mold: Keep an eye out for leaf mold in high tunnels this summer! Researchers at Cornell are working on understanding leaf mold populations and are looking for samples from across the region. Let us know if you see it—umassvegetable@umext.umass.edu or 413-577-3976—so that we can contribute to this important research!

Marginal leaf scorch in tomato caused by bacterial canker. Photo: S.B. Scheufele

Sweet Corn: See the article this week on using pheromone traps to monitor sweet corn.



Corn earworm has been active in western NY and has been in traps in Long Island for several weeks now. George Hamilton of UNH Extension who watches the weather every morning, tells us that storms have been arriving from the

south this year, moving up the coast, rather than coming in from the west. Therefore, it is not surprising that we received a report of our first CEW captures in Concord, MA this week. If you have silking corn, put your traps out now! See the article this issue for management options. If there is no silking corn around, corn earworm adults may be laying their eggs and attacking other crops they enjoy such as tomato, lettuce, sorghum, strawberry, or sunflower.

Common armyworm: has been found in the whorl of tasseling sweet corn in several MA counties this week. They are usually a minor pest early in the season, though damage may appear severe in a few plants (ragged holes and large frass). Treatment for European cornborer will manage these pests as well.

European corn borer larva in the tassel. Photo: K. Campbell-Nelson

European corn borer: We are now seeing the first ECB larvae in tasseling and silking corn, either just below or at threshold. Caterpillars are easiest to treat in the whorl, as tassels are just emerging—hollow cone or flat fan nozzles are most effective. When tassels emerge, caterpillars will move down the stalk and into ears, where they will be more protected from sprays. The first generation of ECB was late this year, and we have just reached peak flight. Make sure to scouting your tasseling corn now, and treat if you reach 15% infestation. One grower is repeatedly happy with one early spray of a spinosad material (don't make repeat applications though, because ECB can become resistant to the pesticide on your farm).

Potato leafhopper active in potato, eggplant, beans

Potato leafhopper (PLH) adults have arrived and the first of the nymphs are now being observed across MA on potatoes, eggplant, and beans. Because low numbers of adults or nymphs cause injury and reduce yield, it is important to protect plants before adult numbers are high and before nymphs build up. Left uncontrolled, PLH populations will continue to increase rapidly. Plant injury and yield loss can be significant. In potato, yield loss occurs even before the development of obvious symptoms. Green beans are very susceptible, especially when they are infested prior to flowering.

Identification. Adults are about 1/4 inch long, light yellow-green, and fly up from foliage when it is disturbed or shaken—they look like light-green sparks flying away from the plants. PLH overwinters in the southern US and the adults move north annually. Once adults arrive, lay eggs, and nymphs hatch after 10 days. Nymphs hang out on the underside of leaves; they are tiny, light green, wedge-shaped and very fast-moving. They tend to move sidewise, crab-like, on the bottom of the leaf. Presence of nymphs indicates an established population.

Damage. Adults and nymphs feed by inserting a needle-like beak into the plant and sucking out sap. They also inject a toxin into the plant, which causes yellowing, browning, and curling of leaves. In potato, leaf margins turn brown and brittle first, followed by death of entire leaves, a condition known as 'hopperburn.' In eggplant, leaf margins and tips turn yellow and curl up. Feeding can reduce yield before damage is visible. Damage can be severe on early-season and red varieties of potato, as well as in green beans, eggplant and raspberries. Long-season cultivars tend to be more tolerant (see table for resistant and more tolerant potato varieties). Beans are more susceptible when they are young than at later stages. Field crops such as alfalfa, clover, soybean, sunflower and tobacco are also hosts.

Hopperburn on bean. Photo: UMass Vegetable Program

Scouting and thresholds. It is difficult to count adults since they fly quickly when foliage is shaken or disturbed. Sweep nets can be used to detect adults—treat if more than 1 adult is found per sweep. If you see one adult per plant when you shake the foliage, you are in that range. Once nymphs develop, they can be monitored by visually inspecting lower leaf surfaces on lower-canopy leaves. Treat if more than 15 nymphs are found per 50 leaves. Use a threshold of 1.5 leafhoppers per leaf in eggplant.

Conventional products. In potato and eggplant, some materials registered for Colorado potato beetle (CPB) adults will also control leafhopper, including neonicotinoid foliar sprays such as Admire Pro or Assail. These and several other carbamate, synthetic pyrethroid and organophosphate products are also registered for leafhopper in potato, eggplant and

snap beans. Refer to the New England Vegetable Management Guide for registered products. While the classes of insecticides listed above generally have high toxicity to bees, there are variations within classes; for example, Assail (acetamiprid) has a lower toxicity to bees (rated as 'medium') while most neonics are rated as highly toxic to bees. Sivanto (flupyradifurone) is a new product in a novel class of chemistries, the butenolides, that works against sucking pests, including PLH. It is also labeled for CPB control. This new active ingredient is being touted as an alternative to neonicotinoids, and has been given a bee toxicity rating of "Low".

Table 1. Resistance of potato varieties to potato leafhopper

Resistant	Tolerant	Susceptible
Elba: Very late, white	Green Mountain: Late, white	Superior
Kin Harry: Early, white	Snowden: Very late, white	Red Norland
	Ontario: Very late, white	
	Katahdin: Late, white	
	Marcy: Late, white	
	Keuka Gold: Medium-late, yellow	
	Red Maria: Late, red	

Organic products. PyGanic EC5.0 (Pyrethrin) has been shown to be the most effective product for reducing leafhopper numbers and damage. Good coverage is important, especially of the leaf underside where nymphs are found. Pyganic breaks down quickly in sunlight, so the residual period is short. Spraying late in the day or in the evening may provide better control than spraying early in the morning. Don't wait for numbers to build up. Row cover can be used to delay PLH infestation in snap beans until flowering, when plants are less susceptible to damage. Using row cover is recommended on young eggplant, as it protects from flea beetles, CPB and PLH.

Pollinators and other beneficials. Although bees do not forage extensively in beans or potatoes, they may be active in the field when these crops or the weeds within the crop fields are flowering. During that time, selection of products with lower toxicity to bees is advised. Look for toxicity information on the label, and also in the New England Vegetable Management Guide (Table 28, and in the products listed for each crop & pest).

For conservation of both native pollinators and honeybees, control weeds in the crop and avoid drift onto flowering borders or crops. However, encouraging some flowering areas in the margins is good for supporting pollinators before and after crops bloom. These can also be a nursery and refuge for beneficial predators and parasites of insect pests.

—UMass Extension Vegetable Program

Celery anthracnose: the leaf curl disease

--Written by Elizabeth Buck, Cornell Vegetable Program

Since 2010, celery anthracnose (aka leaf curl) has become a major challenge in large celery production regions in Michigan and Ontario and sporadically occurs in the Northeast. It does not appear to affect celeriac or other closely related crops. Symptoms, listed from the first noticeable to the most severe, include:

- Small, slightly sunken, light brown elliptical lesions or cracks on the stalks
- Curling leaves (usually downward cupping) and twisting petioles
- Pale green (not yellowed) color +/- stunting
- Sunken dark brown or black lesions along stalk edges, particularly on young heart tissue
- Ruptured, greenish to light brown outer stalk lesions, frequently with gall tissue or adventitious roots on the inside
- Slimy, brown to black rot of the heart tissue that leaves intact outer leaves standing

Celery plant with anthracnose (foreground) compared to an uninfected plant (background). Photo: Cornell Vegetable Program

Celery leaf curl, which describes the most recognizable early symptom, is the descrip-

tive name used when this disease first showed up—before the causal pathogen was identified. We also call it celery anthracnose because we now know that an anthracnose fungus causes the issue.

Left: Leaf curling, petiole lesion, and stalk lesion. Right: Ruptured stalk lesion with gall tissue and adventitious roots. Photos: Cornell Vegetable Program

Disease biology. The anthracnose species primarily responsible for rots in tomato and pepper do not cause celery leaf curl. Celery anthracnose is caused by a tightly related cluster of *Colletotrichum* (pronounced cauli-TOT-rick-um) species, formerly referred to as *Colletotrichum acutatum*. Researchers have just recently been able to use genetic identification techniques to determine that at least two species in that old grouping cause celery leaf curl. *C. fioriniae* and *C. nymphaeae* are the major species causing celery crop losses in Ontario, Canada. *C. nymphaeae* has also been implicated in Japanese outbreaks of celery anthracnose. Both cause disease in fruit crops; *C. fioriniae* is responsible for bitter rot of apples while *C. nymphaeae* causes strawberry anthracnose.

How celery anthracnose arrives on farms is unclear. Some recent work suggests that seeds may carry the disease, which helps explain why symptoms often start in greenhouse transplant production. The pathogen is easily spread in the field by water and splashing soil. The life span of the pathogen in the soil isn't well understood at this point. Once on the farm, celery anthracnose fungi can infect several weeds. Common lambsquarters, redroot pigweed, yellow nutsedge, oakleaf goosefoot, and common groundsel all harbor celery anthracnose without clearly expressing symptoms themselves. This is an important feature of celery anthracnose: the disease can infect a plant then lay quietly in an asymptomatic state (a latent or quiescent infection) until environmental conditions become favorable.

Celery anthracnose thrives under warm, wet conditions. Rapid growth occurs when temperatures are 77 to 86°F, with substantially more disease development at 86 than 77°F. Temperatures as cool as 60 will support fungal growth and spread, but field progression will be slow. Wet leaves also facilitate leaf curl development. Long wetting periods of 48 to 96 hours best promote outbreaks, though as little as 12 hours is sufficient to cause disease. It takes 3-5 days after infection for the small, sunken stalk lesions to appear. The curling starts just days after the initial lesions. Celery leaf curl frequently develops when it has been very hot with heavy thunderstorms followed by high humidity. Overhead irrigation and poor airflow due to weedy fields also increase leaf wetness periods and exacerbate disease.

Full disease outbreaks in celery can cause heavy losses. When environmental conditions favor disease, infection can range from 17 to 100% and cause marketable yield loss of 2 to 80%. In cooler, drier weather, infections can be as low as 1 to 10% with very little to no loss in marketability. In New York, field losses ranging from 20 to 100% have been reported. If an infection is mild and the heart tissue is unaffected, some plants with celery leaf curl can be marketed after an aggressive trimming.

Management. So, what to do about celery leaf curl? For starters, **become familiar with the symptoms**. Next, **keep the greenhouse free of weeds**—a relevant practice for most crops because greenhouse weeds are a common source of pests and diseases. **Scout your plug trays before transplanting into the field**. Remove suspicious seedlings and treat the remaining ones, or consider starting over using new plug trays. Don't plant them into fields with a history of celery anthracnose. Right now there isn't enough understanding of how this disease works to say if *C. nymphaeae* will move from strawberries to celery and vice versa. Assess your comfort level for rotating those two crops, especially following strawberries that had anthracnose. To be cautious, don't move from an infected celery or strawberry planting into the other crop when doing field work. Use drip irrigation if there is celery leaf curl in the transplants. Using plastic or other mulch will help reduce splashing and weed pressure.

Scouting. Scout your celery planting during a long hot period or a few days after a short one. Hold off on scouting until the foliage dries. Pay particular attention if you've had heavy rain, high humidity, or overhead irrigation. Look for curling leaves and then examine the stalks and hearts of plants more closely. Remember that aster yellows requires the presence of leaf hoppers for transmission, produces pronounced yellowing, and does not cause dark stem lesions. Remove infected plants to minimize field spread of celery anthracnose. Control weeds in infected fields to improve airflow and reduce

the risk of carryover on weedy hosts. Minimize overhead irrigation if possible. Harvest fields with infections as soon as the plants are of marketable size to reduce the chances of developing heart lesions. Fields with celery leaf curl should be disced to incorporate infected crop residue and promote break-down. The current recommendation is to rotate away from celery for 3 to 4 years.

Table 1. Variety selection for celery anthracnose mitigation

Least susceptible	Moderately susceptible	Highly susceptible
Merengo	Sabroso	Plato
Hadrian	TZ 6010	TZ 9779
Geronimo		Stetham
Balada		Kelvin
		Nero
		Green Bay
		Dutchess
		Tango

Resistant varieties. Some varieties show some tolerance to celery anthracnose, though no variety is resistant and all varieties screened to date will show some disease. Variety screenings were undertaken by the University of Guelph so cultivars identified as somewhat tolerant should be well adapted locally. I've also included susceptible varieties used by Michigan State for leaf curl experiments (Table 1).

Chemical control. Fungicides can help slow celery anthracnose progression and retain marketable yield. Applications should be directed at the most susceptible young tissue in the heart of the plant. Trials examining fungicide efficacy most often make 1 application before the disease starts, so keep in mind that field results may not be as good if sprays begin after disease is found. Stobilurin fungicides (Group 11) have been shown to best reduce celery leaf curl progression in the field and best help maintain yield. Cabrio consistently performs well. Stobilurin fungicides really should be applied with a protectant and be rotated with non-group 11 fungicides because of resistance concerns. Treat any infected seedlings with a group 11 when they are set in the field. Cuprous oxide forms of copper can help in low pressure weather conditions, but do little when environmental conditions are highly favorable. See Table 2 for which fungicides are available in NY and MA to treat celery anthracnose, and early and late blights of celery.

Table 2. Fungicide options available in NY for common celery foliar diseases. Always check the product label for the most thorough and current application information.

Fungicide	Active Ingredient	FRAC Group	Diseases Listed	Rate & Notes	PHI (days)
Cabrio	Pyraclostrobin	11	Anthracnose, Early & Late Blight	12-16 oz /A, 64 oz/yr max ≤ 2 sequential apps	0
Pristine	Pyraclostrobin/ boscalid	11 + 7	Anthracnose, Early & Late Blight	10 -15 oz /A, 2 apps/yr	0
Merivon	Pyraclostrobin/ fluxapyroxad	11 + 7	Anthracnose, Early & Late Blight	4-11 fl oz, 3 apps/yr	1
Quilt	Azoxystrobin/ propiconazole	11 + 3	Early & Late Blight	14 fl oz /A, max of 1.5 lb azoxystrobin products/yr	14
Bravo WeatherStik	Chlorothalonil	M5	Early & Late Blight	2-3 pt/A, protectant	7
Quadris	Azoxystrobin	11	Early & Late Blight	9.0-15.5 fl oz /A, 1 spray then rotate groups	0
Flint	Trifloxystrobin	11	Early & Late Blight	2-3 oz /A	7
Tilt	Propiconazole	3	Early & Late Blight	4 fl oz /A	14
Various	Cuprous oxide	M1	Check the label of your preferred formulation		
Switch	Cyprodinil/ fludioxonil	9 + 12	Late Blight	11-14 oz/A	0

Forecasting models. Ongoing work at the University of Guelph is showing good disease control success by using the TOMCAST forecasting model to help time fungicide applications. Researchers are testing a threshold of 15 and 25 disease units. To date they have found that both provide the highest level of control possible are more economical than calendar sprays because fewer sprays are necessary. Reducing the number of applications will make rotating fungicide groups much more achievable. Remember that protectant fungicides applied for celery early and late blight are generally effective against a broad range of diseases and may have a secondary benefit of allowing you to postpone treatment for anthracnose.

With good cultural practices and fungicide use, sporadic outbreaks can often be controlled enough to harvest a portion of an infected planting. While celery may not be a major crop in the Northeast, celery anthracnose tends to cause major losses when it shows up. There is ongoing research into celery leaf curl in Ontario and Pennsylvania which will hopefully lead to improved future control.

MANAGE SWEET CORN PESTS THROUGH SCOUTING AND PHEROMONE TRAPPING

The earliest corn is now tasseling and some is silking in MA. The first European corn borer (ECB) flight started the first week of June and is now reaching it's peak. The biocontrol organism *Trichogramma ostrinea*, which parasitizes ECB eggs, should have been released within the first week of moth flight, several weeks ago. Other major sweet corn pests will be emerging and/or arriving soon, including corn earworm (CEW), fall armyworm (FAW), and sap beetle. This year, we are also monitoring for western bean cutworm (WBC) in the western part of the state where the pest may move in from New York. Common armyworm has been seen this year, causing damage in several locations in MA.


Brown and green corn earworms. Photos: E. Grundberg

Given this menagerie of pests to manage in sweet corn, farmers, Extension educators, and scouts in Massachusetts all contribute to a statewide pheromone trapping network for ECB, CEW, FAW and now WBC, in order to monitor the pest populations. We also receive and publish trap counts weekly from Extension educators in the neighboring states of NY and NH (see ways to access their data in the references section of this article). We report this information regionally so that growers can be prepared to manage these pests effectively wherever they may be.

European corn borer. Photo: R. Hazzard

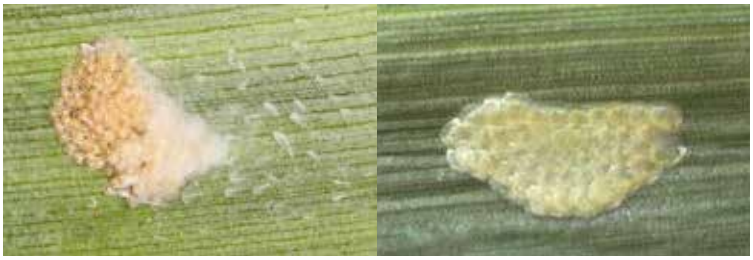
Fall armyworm. Photo: R. Hazzard.

Both pheromone trapping information and scouting are needed to successfully manage corn pests. Refer to the UMass Sweetcorn Insect Management Field Scouting Guide for instructions and record sheets to scout corn now. Each stage of corn growth (whorl, tasseling and silking) has a different scouting procedure and treatment thresholds (Table 1).

Whorl-Stage Corn: FAW and ECB may be found in whorl-stage corn, but it is better to wait for tassle emergence to begin treatments. Darcy Telenko of Cornell Extension wrote: "Two well-timed applications at tassel emergence have been found to be more effective than applications at the whorl stage on bare ground sweet corn even when ECB trap counts are high. Larvae feeding in the whorl are protected from insecticide applications and mortality will not be as high as at tassel emergence, when larvae feeding in the emerging tassel are exposed to the spray. Larvae will leave the tassel as it opens up and no longer provides a moist, protected feeding environment. Insecticide applications need to be timed to kill larvae before they bore into a new feeding location where again they will be protected from sprays. In fields with very uneven development, two applications may be necessary, one when approximately 25-50% of the tassels have emerged, and again after 75-100% of the tassels have emerged, if the field is still over threshold."

Tasseling Corn: Begin scouting for ECB and FAW larvae when tassels first emerge in the whorl (now!). For corn borers, look down into emerging tassels, or pull them out to inspect more closely, for tiny larvae or frass (white to brown mate-

rial about the size of fine sand). For armyworms, look for ragged feeding holes and frass pellets the texture of coarse sawdust. See Table 1 for thresholds for tasseling corn. Sprays should be made to target the tassels. Treat the field if more than 15% of plants are infested with FAW and/or ECB (combined count).



Eggs of fall armyworm (left) and European corn borer (right). Photos: P. Porter, Texas A & M, and G. Dively, Univ. of Maryland

Silking Corn: Once corn reaches the silk stage, action thresholds are usually based on trap captures for CEW rather than field scouting (Table 2). Not all moths found in pheromone traps are pests! Make sure to learn moth ID before making spray decisions. Refer to Identifying Moths in Traps for Sweet Corn Pests. If CEW trap captures don't warrant a spray, continue scouting your fields for ECB and FAW to determine if you need to spray. Once a field has reached the silking stage, scout the ear zone (roughly from two leaves above and one leaf below the ears) for ECB egg masses and ECB or FAW larvae. ECB egg masses are found most frequently on the underside of leaves near the midrib, and consist of approximately 10-20 flattened eggs overlapping like fish scales. Eggs are white when first laid, and turn cream-colored after a couple of days. Black head capsules of the tiny larvae show through the surface of the eggs within 1 day of hatching (known as the "black head" stage). FAW eggs are laid in batches of 100-200. Eggs are round and covered in a felt-like layer which is produced by the abdomen of the moth. The eggs change color from green to light brown before hatching in 2-7 days. The adult female lays egg masses on the surface of lower leaves. Each female can lay more than 1,000 eggs in her lifetime. Egg masses of both moths can also sometimes be found on the flag leaves of the ears or on the husk itself. Look down into the tops of the silks for newly hatched larvae, and pull the ear away from the stalk slightly to look for larvae feeding between the stalk and the ear. See Table 1 for thresholds for silking corn. Sprays should target the ears, using dropped flat fan or cone nozzles.

Table 2. Spray intervals for corn earworm

Moths/Night	Moths/Week	Spray Interval
0 - 0.2	0 - 1.4	no spray
0.2 -0.5	1.4 - 3.5	6 days
0.5 - 1	3.5 – 7	5 days
1 - 13	7 – 91	4 days
Over 13	Over 91	3 days

Look for scouting reports and the pheromone trapping data map with corn pests in the *Pest Alerts* section of V*egetable Notes* this season.

Table 1. IPM decision making guide for the major sweet corn pests

	Moth life cycle		**Action Thresholds based on crop growth stage**		
	Emergence or Arrival	**Egg hatch**	**Whorl stage**	**Tassel emergence to first silk**	**Silk stage to 5 days before harvest**
European corn borer	Two generations/ yr 374 GDD and 1400 GDD base 50°F	450 GDD and 1550 GDD base 50°F or 4-9 days	Usually no spray necessary	15% infestation combined with FAW	Trap captures of EII (IA) and Z1 (NY) traps combined exceed 12 moths per week, then spray weekly
Corn earworm	When silk is present, or early July – September. Arrival from southeast and west.	2.5-6 days	Usually no spray necessary	Monitor trap catches to detect arrival and flight activity (see Table 2 for spray intervals)	Trap captures exceed 1.4 moths per week, then use Table 2 to determine recommended spray interval
Fall armyworm	Early-mid July – September. Arrival up the coast from the south.	2-10 days	Scout when moths are captured in pheromone traps and treat at 15% infestation	15% infestation combined with ECB	5% infestation combined with ECB

Other sweet corn trapping networks:

New Hampshire: https://extension.unh.edu/resource/sweet-corn-ipm-weekly-scouting-reports

New York: http://sweetcorn.nysipm.cornell.edu/

Long Island Fruit and Vegetable Update: $20/year subscription, may be relevant for growers in southeastern MA so that you can be prepared for CEW flights that come in from the south

Pennsylvania: http://www.pestwatch.psu.edu/sweetcorn/tool/index.html

--Written by Katie Campbell-Nelson, UMass Extension

Events

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.

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.

UMass/SARE Organic Strawberry Twilight Meeting

When: TODAY! Thursday, June 20, 2019 – 5:30 to 8pm

Where: Red Fire Farm - Montague location, 184 Meadow Rd., Montague, MA

Join the UMass Fruit Team and Red Fire Farm to learn about some novel organic weed management strategies in straweberries. Tour Red Fire's trials and stay for light refreshments. For more information on the trials that will be presented at this meeting, see the event page, linked to in the title.

REGISTRATION: This event is free, but please RSVP for planning purposes by emailing the UMass Fruit Team at umassfruit@umass.edu.

Fruit and Vegetable Program Twilight Meeting at Indian Head Farm

When: Tuesday, June 25, 2019 – 4:30pm to 7:00pm

Where: Indian Head Farm, 232 Pleasant St., Berlin, MA 01503

Come hear from Extension Educators about research and management updates for brown marmorated stink bug, spotted wing drosophila, and high tunnel production issues, which we have worked on with Indian Head Farm over the last few years.

Indian Head Farm has also recently updated their irrigation system with Harris Irrigation, converting overhead to drip, through grant support from the Massachusetts Department for Agricultural Resources (MDAR), conservation support from the Natural Resources Conservation Service (NRCS). They are also in the process of a farm transfer to the seventh generation, with support from Land For Good. Come learn how they do it all, socialize, and stay for a light supper.

**1 pesticide recertification credit is available for this workshop.*

REGISTRATION: This event is free, but please register by June 21 so that we can plan accordingly. Click here to register for this workshop online. Or, contact us at (413) 577-3976 to register by phone.

- 4:30 Introductions
- 4:45 Brown marmorated stink bug and spotted wing drosophila research and management updates – Liz Garofalo, UMass Extension Fruit Program

- 5:15 Automating drip irrigation – James Wheeler, Jim Peeler of Harris Irrigation, Gerry Pulano (MDAR Grants for farmers)
- 5:45 Management lessons from 20 New England high tunnels – Katie Campbell-Nelson, UMass Vegetable Program and Jon Sardell, Indian Head Farm Field Manager
- 6:15 Farm Succession Planning – Farmers Tim and Janet, and Kathy Ruff from Land for Good
- 7:00 Meeting adjourned.

THANK YOU TO OUR SPONSORS:

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