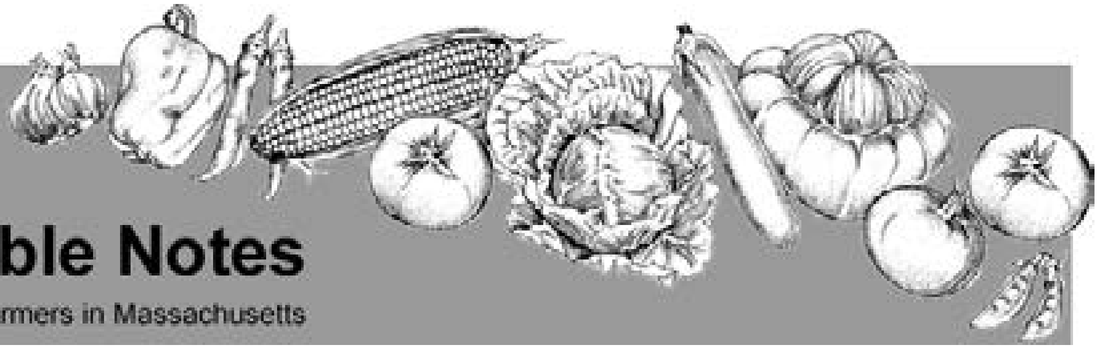
UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts



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In this issue:

Crop conditions

The dry conditions continue across the state despite the passing storms received by some counties earlier in the week. Plants have responded well in the areas that did get some moisture. Some hail and heavy rain were seen in Franklin County but no damage was reported. The weekend forecast is calling for cooler temperatures and passing thunderstorms which will hopefully bring some relief and push new growth and yields on wilted crops.

Pest pressure is moderate. Flea beetles and thrips continue to feed on various crops. Caterpillars continue to be a problem in brassicas and tomato hornworm has made an appearance this week.

Continue looking for late blight in tomato and potato fields as rain and high levels of humidity foster the development and spread of the spores that cause this devastating disease. Preventative sprays should have been made earlier in the week to protect healthy plants.

Harvesting of all warm season crops is in full swing. Farm stands are busy and sales are steady.

DATE:	7/26/2012					
Location	GDD Base 50F	7-Day Rainfall (in)	LB Severity Values - season*	LB Severity Values - 7 day	Tomcast Severity Values - season**	Tom-cast Severity Values - 7 day
Pittsfield	1412	1.98	100	8	46	5
South Deerfield	1552	0.17	61	1	40	7
Belchertown	1730	0.45	64	3	58	5
Bolton	1607	0.37	70	1	42	4
Stow	1749	0.01	65	3	67	6
Dracut	1589	0.17	67	1	41	4
Tyngsboro	1641	0.28	62	1	31	3
Boston	1632	0.57	49	0	58	4
Sharon	1553	0.27	66	3	60	6
East Bridge-water	1517	0.70	90	8	42	3
*Values accumulated since May 1. Every site is over threshold for Late Blight, even if planting did not occur until mid-May.						
**Values accumulated since May 14. The usual threshold for Tomcast is 25 (since transplanting).						

Late blight update

Late blight has been confirmed in Franklin, Middlesex, Norfolk, and Berkshire counties. All confirmed MA cases to date have been on tomato. While many samples have been submitted to the diagnostic lab, few of them so far have tested positive for late blight. While the recent hot and dry weather has kept the spread of the disease largely in check, the anticipated shift to more cloudy weather and occasional rain that much of the state is expecting will enhance the spread of the pathogen. Commercial fields should be inspected regularly and the spray interval should be tightened in areas that are experiencing the scattered precipitation that is falling on parts of the state this week.

	Total severity values during last 7 days					
	<3	3	4	5	6	>6
Total rain/ irrigation for past 10 days	Spray Interval for late blight control (in number of days)					
>1.2 inches	10-14	10	7	5	5	5
<1.2 inches	10-14	10-14	10	7	5	5

BIOLOGICAL CONTROL OF PLANT DISEASES

Biological control of plant diseases can be broadly defined as the use of one organism to influence the activities of a plant pathogen. Biocontrol organisms can be fungi, bacteria, or nematodes. Most are natural inhabitants of the soil and the environment and are not pathogenic to birds, mammals (including humans), or fish. They are not genetically modified and generally have short re-entry and days to harvest intervals. Biocontrol organisms work by competing with the pathogen for space and nutrients, by parasitism or predation, by inducing the plant's natural defense system, and/or by the production of antimicrobial substances (antibiotics like streptomycin). Often several mechanisms function together to make an organism effective. These products are living organisms or dried spore preparations and must be handled differently than conventional fungicides. They are sensitive to temperature extremes and must be applied immediately after mixing with water. They may also require special attention to pH and exposure to chlorine or UV light, and their shelf life may be limited.

There is a lot of interest in these products and few replicated University field research trials on which to base recommendations. Product efficacy claims are often based upon company sponsored research that occurred in greenhouses or other controlled environments. A brief summary of field trials found in recent literature follows:

Actinovate (*Streptomyces lydicus*) reduced root and seed rot severity in peas and resulted in significantly higher final emergence and significantly lower final disease in spinach challenged by Pythium and Fusarium (soil-borne fungi). There was no effect found on Phytophthora fruit rots of pepper and pumpkin or Powdery Mildew on pumpkin.

Bi-nucleate Rhizoctonia are effective against diseases caused by *Rhizoctonia* and significantly reduced Black Scurf and stem canker on potatoes as well as root rot and wirestem incidence on broccoli.

BioYield (plant growth promoting rhizobacteria) significantly reduced incidence of root rot (*Pythium, Rhizoctonia*) and wirestem (*Rhizoctonia*) on broccoli, and resulted in significantly less post emergence disease (soil-borne fungi) on spinach, but had no effect on tomato foliar diseases such as *Septoria*, *Alternaria* (Early Blight), and *Sclerotinia* (White Mold).

Compete Plus (six species of *Bacillus*, *Streptomyces griseoviridis*, *Trichoderma harzianum* plus organic nutrients) significantly reduced incidence of potato tubers with both Black Scurf (*Rhizoctonia solani*) and common scab (*Streptomyces scabies*).

Compost Tea significantly reduced potato tubers with both Black Scurf and Common Scab and reduced scab severity, but resulted in significantly lower final biomass and final emergence when applied to spinach to combat soil-borne diseases.

Contans (*Coniothyrium minitans*) is applied to the soil before cropping and can significantly reduce lettuce drop caused by Sclerotinia species.

Kodiak (*Bacillus subtilis*) is a seed or soil treatment that significantly reduced Black Scurf and stem canker on potato, resulted in significantly less post emergence disease and significantly higher biomass in spinach challenged by soil-borne diseases. It also significantly reduced seed and root rot in peas. Treatment with Kodiak had no effect on *Rhizoctonia* on bean, *Phytophthora* on pumpkin, or Common Scab on potato.

Muscador (*Muscador albus*) is a novel biocontrol organism that acts as a biofumigant by producing gaseous compounds. It has shown good efficacy against storage insect pests of apples and potatoes. Application of Muscador to radish resulted in significantly less root and hypocotyl rot and less Phytophthora fruit rot on pepper. Combining Muscador treatment with a resistant pepper cultivar significantly reduced *Phytophthora* disease severity. No effect of Muscador was noted with Clubroot (*Plasmodiophora brassicae)* on radish and *Phytophthora* on winter squash.

Plant Shield (*Trichoderma harzianum*) had no effect on *Rhizoctonia* on bean or potato, Common Scab on potato, *Botrytis* on tomato, or Early Blight on tomato, although a trend toward reduced defoliation was noted.

Serenade (*Bacillus subtilis*) failed to control the tomato diseases *anthracnose*, bacterial canker, and bacterial spot; had no effect on *Sclerotinia sclerotiorum* (White Mold) on lettuce or beans; and did not reduce Powdery Mildew on pumpkin or winter squash. Serenade did significantly increase yield and lower the incidence of root rot caused by *Rhizoctonia* on both beans and radish.

SoilGard (*Trichoderma virens*) significantly reduced Black Scurf incidence and Common Scab severity on potato and resulted in significantly less post emergence disease on spinach from soil-borne disease, while having no effect on spinach and Pythium damping-off.

If one word could be used to describe research trials with these materials, that word would be inconsistent. The environment and application techniques have large impacts on their efficacy. Biocontrol organisms are only effective as preventive control and proper timing of application is critical. An unfavorable environment for their establishment or an environment too favorable for the pathogen can result in control failure. These organisms perform best at low pathogen populations; once disease is established, they will have little positive effect. Establishment of biocontrol organisms on foliar surfaces is difficult; most positive research results come against soil borne problems such as root, fruit, crown and seed rots. Combining these products with naturally resistant or tolerant cultivars is a promising avenue for their use. Biocontrol organisms can also be integrated with naturally suppressive composts, improved sanitation and other cultural controls, and with conventional fungicides to reduce disease control chemical applications.

- M. B. Dicklow, UMass Extension

PEPPERS: WATCH FOR ECB, APHIDS AND PEPPER MAGGOT

European Corn Borer.

Moths lay flat, white egg masses on the underside of leaves. Eggs hatch in 4-9 days, depending on temperature. ECB caterpillars are whitish or gray with a pattern of dark spots and a black or dark brown head. This dark head capsule distinguishes them from pepper maggots, which are completely white. Young larvae usually enter the fruit by tunneling under the cap. They leave a pile of light brown frass on the surface. Often this is the only indication that a pepper is infested until two or three weeks after the borer enters, when bacterial soft rot causes the fruit to decay. Because ECB caterpillars don't spend much time feeding in foliage, there is a fairly short window for gaining control with insecticide applications. Biological control is also an option – see below.

The severity of ECB in peppers varies in MA and around New England. Some farms – typically in areas where farming is less dense and ECB populations have not built up – do not see much damage from this pest. In the Connecticut Valley and in Southeastern MA, an unsprayed pepper field is likely to have anywhere from 10 to 100% of the fruit infested. In some cases, it seems that sweet corn – which ECB prefer over peppers – helps to draw ECB away; in other cases, presence of sweet corn near peppers provides no benefit at all. Use flight counts and historical experience to help you decide which applies to you. Getting good ECB control is especially critical when you want to sell ripe, colored peppers.

ECB monitoring. Flight is detected by placing white nylon mesh Heliothis Scentry™ traps in weedy areas near pepper fields. This is the same type of trap that is placed on the edge of sweet corn fields. Traps should be placed 50-100 feet apart with the base at the top of the weed canopy. Bait one trap with a lure for the Iowa strain (ZI) and the other with a lure for the New York strain (EII), as both of these strains occur throughout New England. Check traps once or twice a week from the second week of July onward.

ECB threshold. Insecticide applications should begin one week after trap counts reach 7 per week (or one per night). This week delay provides an ample time margin for mating, egg-laying and egg hatch to occur before the larvae can enter the fruit. During the period when ECB moths are active, a regular schedule of insecticide applications should be maintained. This flight period usually lasts through August. At the end of the flight, when trap captures drop below 20 per week, insecticides should no longer be needed.

Insecticides. The intervals recommended for insecticide applications depend on the active ingredient used. Acephate products (Orthene 97, 7dh) can be used at 10-day intervals; insect growth regulator methoxyfenozide (Intrepid, 1 dh) at 7 to 10 day intervals; synthetic pyrethroids (products range from 1 to 7 dh); spinosad (1dh) at 7-day intervals; and Bacillus thuringiensis products twice weekly. Days to harvest restrictions for these insecticides vary from 0 to 7 days, and often dictate the choice of material. Intrepid is a selective insecticide that conserves natural enemies while controlling ECB and is easier on parasitoids than any other products with the exception of Bt. Feeding stops within hours, but it takes several days for the larvae to die. If you are concerned about pepper maggot, use of an Acephate product for the first ECB spray will also control the end of pepper maggot flight. For more details on registered products check the New England Vegetable Management Guide.

Using Trichogramma wasps for biological control of ECB in pepper

Sweet corn is not the only crop where ECB can be controlled with the parastic wasp, *Trichogramma ostriniae*. Most of what you have read about using Trichogramma in corn applies to peppers, with a few important differences. Peppers are susceptible to the second generation of ECB, because that is when the plants are fruiting. ECB will invade fruits that are > ½ inch across. Trichogramma attacks only the egg stage, so timing is critical. We recommend that you begin releases the week that flight begins and continue weekly releases for a total of 4 weeks. Release 90,000 to 120,000 wasps per acre and spread the cards out throughout your pepper block. Higher rates are needed in peppers compared to sweet corn because the tolerance for damage is virtually zero and ECB larvae attack the fruit directly. Four releases are needed because the egg laying period for the second generation is longer than for the first generation of ECB. Fortunately, peppers are also a higher value crop and worth the extra cost. After four releases, Trichogramma will have reproduced in the field and biocontrol should continue.

Wasps can be ordered from IPM Laboratories, at www.ipmlabs.com or by phone, 315-497-2063. Wasps can also be used in combination with insecticide; if so, choose a selective material (see above) that will not kill wasps.

Pepper Maggot Fly

Pepper maggot fly (*Zonosemata electa*) is closely related to the apple maggot fly and has one generation per year. Adults emerge in mid to late July and are active for several weeks. Because flies lay eggs directly into pepper fruit, the damage often goes unseen until it is too late. In New England, pepper maggot has typically been a southern New England pest – Connecticut, southeastern MA, and scattered locations farther northward. It is often a farm-by-farm or field-by-field phenomenon without any clear reason for high or low populations that occur in a particular place. The best way to detect activity is to look for stings on the fruit, and these are easiest to spot on cherry peppers.

Pepper maggot flies are smaller than a house fly, bright yellow with three yellow stripes on the thorax, green eyes, and clear wings with a distinct banding pattern. On a daily basis, flies enter the field and return to the surrounding forest – passing across the border areas. Females insert their eggs directly into the pepper fruit and leave a small dimple – an oviposition sting or scar.

The legless white maggots feed and tunnel inside the fruit, especially in the placenta. Maggots reach about ½ inch in length over a period of about two weeks, and have no distinct head capsule. When they are ready to pupate, they exit at the blossom end, leaving tiny round exit holes. These holes allow for the entry of pathogens into the fruit. Sometimes the oval brown pupae can be found inside the fruit. Often damage is detected only because of premature ripening or decay of the fruit.

Pepper maggot monitoring. Maggots prefer to lay eggs in the small round fruit of cherry peppers. When these are planted in the border rows they work very well as indicator plants. The egg-laying stings appear as depressions or scars and are easy to find on these small, round fruit. By timing insecticide applications with the first occurrence of the stings on the indicator plants' fruit, damage to the main crop can be avoided with a minimum of spraying. If cherry peppers are not part of your crop mix, look for stings on bell peppers.

It's too late for this year, but if this pest is a concern for your farm, consider using perimeter trap cropping which is very effective. Plant one row of cherry peppers around the perimeter of the crop. Two or three rows of hot cherry peppers can be planted around the perimeter of the pepper crop, encircling it like castle walls. These peppers are more attractive to the maggot flies than the sweet bells, so the flies will build up in the perimeter, allowing for a perimeter spray that will reduce pest populations and protect the main crop. Perimeter trap crop systems can be as effective as whole field sprays while drastically reducing pesticide costs.

Pepper maggot threshold: If stings are observed on fruit, make two insecticide applications, 10-14 days apart, with a material labeled for pepper maggot. Pepper maggot fly activity can be very localized, and varies by farm, by region, and by year. Many farms never have a problem with this pest. Some may have it and not realize it, because it is possible to confuse maggot damage with damage caused by European corn borer. Check nearby fruit carefully for proper identification if fly has been captured. If a given farm has a history of pepper maggot activity, and pepper maggot, then it is recommended that an insecticide be applied on that farm. Farms that have never had a problem with this pest generally do not need to be concerned, except that the range of this pest seems to be expanding.

Aphids

Aphids fly into pepper fields in June and July. The most common species is green peach aphid (*Aphis gossypii*), which is light green, yellow green, or pink, with no distinctive markings. Aphids can easily be seen with the naked eye, but a 10X hand lens allows you to observe them more clearly. Wingless females use their piercing-sucking mouthparts to feed on the underside of leaves. Females produce smaller, light-green nymphs, which feed in clusters nearby.

Most of the time, beneficial insects such as ladybeetles and lacewings keep aphid numbers under control in peppers. By avoiding unnecessary insecticide applications, these natural enemies can be conserved. Use of broad-spectrum insecticides, particularly synthetic pyrethroids, to control other pests may cause aphid outbreaks. High numbers cause a buildup of sticky honeydew secretions on leaves and fruit.

Green peach aphids can vector viruses such as cucumber mosaic virus (CMV). Insecticides are not effective in controlling these viruses because the transmission occurs rapidly at low population numbers.

Aphid monitoring. From mid June to September, examine the underside of four leaves per plant on 25 plants chosen at random. Count aphids found. Calculate the average aphids per leaf (divide total by 100).

Aphid threshold: 10 per leaf. If five per leaf are found, check again within a week to determine if numbers are rising or falling.

-R. Hazzard and A. Cavanagh, University of Massachusetts, J. Boucher, University of Connecticut Extension

STORAGE DISEASES OF ONION AND GARLIC

Botrytis Neck Rot (*Botrytis alli*) occurs primarily on bulbs in storage. The pathogen can overwinter as sclerotia on rotting bulbs or in the soil, or may be seed-borne. Onions can be non-symptomatic at harvest, with disease developing during storage. The fungus usually enters through succulent neck tissue or mechanical wounds. Symptoms generally appear as decay at the neck, which gradually moves downward. Scale tissue becomes water-soaked and soft. White to gray mycelium may appear between scales, and sclerotia and gray mold form on the shoulders of bulbs. The development of this disease is not well understood since onion plants remain relatively symptomless. The pathogen cannot infect well-dried neck tissue. A healthy onion with a well-cured neck is rarely affected by neck rot in storage.

In garlic, the disease usually appears first on necks near the soil line at any time after spring greenup. The disease is more severe when it starts early in the season. The fungus moves rapidly into the succulent garlic bulb's neck region, producing a water-soaked appearance. A gray mold develops on the surface of or between garlic scales, later producing black bodies (sclerotia) which develop around the neck. Extensive development of sclerotia is best seen on maturing bulbs just before and during harvest. Bulbs infected late break down to a soft mass, and secondary infections by other organisms follow.

Black Mold (*Aspergillus niger*) occurs in the field, during transit, and during storage. The fungus grows saprophytically on dead tissue and is a common inhabitant of the soil; spores are also common in the air. Bulb infection usually occurs through injured tissues in the neck or wounds on roots, basal stem plates, or outer scales. Uninjured bulbs are seldom infected. Seeds may be infected and the pathogen disseminated in infected seeds or transplants. Preemergence damping-off can occur if infected seed is planted. The disease is favored by warm temperatures during the growing season or in storage. Infected bulbs display a black discoloration at the neck or in bruised areas, lesions on outer scales, or black streaks beneath outer scales. As the disease develops, the entire bulb may appear black and shriveled as all scales are infected. Soft rot bacteria may invade, creating a watery rot. Some bulbs will show no external symptoms, but show central portions discolored gray to black when cut open.

Fusarium Basal Plate Rot is initiated in the field on onions and garlic during growth. Affected bulbs may display no symptoms at harvest, but subsequently rot in storage. Affected bulbs may appear discolored with internal scales or storage leaves appearing brown and watery. Infected onion stem plates may be brown with white mycelium. Infected garlic may display a reddish purple discoloration on stems, bulbs, or bulb sheathes.

Blue Mold of onion and garlic may be caused by several *Penicillium* species. Penicillium decay of garlic caused by *P. hirsutum* is responsible for poor plant stand in the field and storage decay. Symptoms in the field include clove decay after planting, and wilted, yellowed, or stunted seedlings. Infected plants are weak and stands are poor. Other species of *Penicillium* that cause Blue Mold are common on infected animal and plant debris in the soil. These fungi attack a wide range of fruits, vegetables, bulbs, and seeds. The disease first appears as pale blemishes, yellow lesions, and soft spots. A blue-green mold develops on lesions. When bulbs are cut open, one or more of the fleshy scales may be discolored and water-soaked. In advanced stages, bulbs may deteriorate into complete decay. In garlic, the pathogens survive in infected cloves. Invasion of onions is usually through wounds, sunscald, or freezing injury, although the fungi are able to infect uninjured bulbs. Blue Mold pathogens are often present in internal scales of onions with neck rot.

Smudge (*Colletotrichum circinans*) affects onions, leeks, and shallot, but not garlic. The pathogen is soil-borne, and can persist in the soil for many years, surviving in colonized onion debris. The pathogen is favored by warm, wet weather, and can complete its life cycle in a few days when conditions are favorable. Smudge appears on dried outer scales and lower portions of the bulb as dark green dots which turn black. The symptoms may be scattered, but often appear in distinct circular, concentric rings. The fungus produces enzymes that break down cell walls and allow mycelium to proliferate throughout the bulb.

Storage Disease Management

- Control other diseases and insects in the field to prevent entry of storage rot organisms.
- Black Mold can be reduced by applying calcium carbonate to protect wounds caused by leaf clipping.
- Bruising and other mechanical injury should be avoided when bulbs are harvested, stored, or transported.
- In some instances, treating of bulbs with fungicide before storing may be recommended.
- Cure onions and garlic with hot, dry conditions. A healthy onion with a well cured neck is rarely infected with neck rot during storage.
- Inspect garlic and onion before storing and discard all symptomatic bulbs.
- Practices that hasten curing include undercutting bulbs to sever all roots, avoiding nitrogen fertilization late in the season, and proper plant spacing.
- Ideal storage conditions are at 32-34˚ F with 70-75% relative humidity.

VIRUS & APHIDS IN VINE CROPS

Important Viruses

Cucurbits are susceptible to more than 32 viruses. Major virus diseases include Cucumber mosaic virus (CMV), Watermelon mosaic virus (WMV), Papaya ringspot virus (PRSV), Zucchini yellow mosaic virus (ZYMV), and Squash mosaic virus (SqMV). However, ZYMV and SqMV seldom occur in the Northeast. The cucurbits most susceptible to viruses are summer squash (yellow, zucchini, and scallop types), pumpkin, and certain varieties of winter squash (acorn, delicata, and spaghetti types). Other types of Winter squash such as butternut, Blue Hubbard, buttercup, and kabocha are not severely affected by viruses, though their foliage may show symptoms. Cucumber is resistant to CMV and not seriously affected by the other viruses.

Curcurbit viruses can cause a wide variety of symptoms, including color breaking or mottling of fruit, mosaic or mottled patterns on leaves, and darkening, distortion, and/or blistering of leaf tissue.

Transmission

Severity is usually determined by the timing of infection; the earlier infection occurs, the greater the impact on plant growth, fruit symptoms, and fruit set. Delaying the onset of infection by several weeks can have a dramatic effect on the amount of damage. Virus diseases are not usually seed-borne, and migrant aphids (winged forms) are therefore responsible for most introductions. SqMV is vectored by cucumber beetles.

Aphids pick up viruses by probing (tasting) an infected leaf. This happens rapidly—within seconds or minutes. A dormant period is not required and the aphid can immediately transmit the virus by probing another plant. Aphids remain infective for a short time, usually just a few hours. Winged aphids stop on many types of plants and probe to determine if the plant is their host plant. If it is not, they will fly away.

Prevention

Insecticides DO NOT act quickly enough to prevent infection or control the spread of non-persistent viruses. Systemic materials are generally the most effective insecticides available for aphid control, but are ineffective in preventing virus spread. Systemic insecticides work to control aphids because they are taken into the plant tissue, and ingested by aphids when feeding. However, when probing a leaf an aphid is not feeding and does not ingest plant sap or insecticide. In fact, the presence of an insecticide may actually stimulate probing and cause aphids to move from plant to plant in an effort to find a suitable feeding site. This can increase the spread of viruses in cucurbit crops. Once a virus becomes visible in your crop there is no cure or chemical treatment.

Cultural practices

- Remove and destroy affected plants to prevent a source of virus for further infections.
- Where possible, do not grow ornamental plants and vegetable transplants in the same greenhouse.
- Plant resistant cultivars. Currently, virus resistance exists only in summer squash and zucchini varieties, but resistance can slow the spread of virus diseases in squash to nearby pumpkin fields.
- Cover the crop with floating row covers in the spring to prevent the early influx of virus carrying aphids. Be careful with this tactic, as aphid populations can develop quickly under row cover if present when the crop is covered. Make sure plants are not already infested before you apply row covers.
- Reflective mulches can repel aphids. Though expensive, they may be useful if viruses are a chronic problem.
- Eliminate weed host reservoirs such as shepherds purse, dandelion, field bindweed, purple dead nettle, and Canadian goldenrod.
- Prunus species (peaches, cherries, etc.) are attractive to green peach aphids. Removal of wild cherry trees from around fields can make the area less attractive to green peach aphids. The green peach aphid is not the only aphid that transmits viruses, but it is important because it is a universal vector.

UMASS SUSTAINABLE VEGETABLE PRODUCTION COURSE

To assist new vegetable farmers, UMass Extension is conducting a Sustainable Vegetable Production course. This course is designed for beginning farmers wishing to gain an understanding of horticultural fundamentals and strategies and their relation to environmental quality. Attendees will learn about sustainable approaches to commercial vegetable production, making environmentally appropriate decisions related to plant selection, plant maintenance, and pest and nutrient management. Topics are based on current research and information emphasizing environmental stewardship, Best Management Practices (BMPs) and integrated pest management (IPM). Participants will develop an understanding of how proper management practices impact natural resources such as soil and water. This program focuses on the management of vegetable rotations as a whole, and is intended for first-time farmers.

This 60 hour course is a comprehensive certificate short course taught by UMass Extension Specialists and University of Massachusetts faculty. Cost: $675, includes all materials. Classes run 9:00 AM - 3:30 PM daily. Register early, as space is limited. Registration deadline: October 24, 2012.

For a complete schedule and to register online, go to

http://extension.umass.edu/landscape/education/green-school-sustainable-vegetable-production-track

Certificate: Certificate is optional. For those wanting a certificate it will be awarded upon achieving a passing score based on an average of daily quizzes. It is not necessary to take the daily quizzes if receiving the certificate is not desired.

The program will be held at the Holiday Inn, 265 Lakeside Ave., Marlboro, MA on October 31 - December 12, 2012; meets twice/week, 9 am to 3:30 daily. For more information, contact UMass Extension at (413) 545-0895 or eweeks@umext.umass.edu or Dr. Frank Mangan fmangan@umext.umass.edu

Sweet Corn Report

Check corn earworm traps after any storms move through your area to stay on top of flights that may have migrated into your corn fields.

Like most crops at this point sweet corn would welcome rain. Corn earworm numbers remain relatively low. Most growers are picking very clean corn. Silk sprays can be extended to 6 day intervals where CEW is less than 4 per week (see table). Fall armyworm captures are mostly nil throughout the region, with a few scattered traps catching 1 moth. Captures of ECB remain variable, with most locations reporting very low numbers, but there are still a few outliers reporting higher populations. The high numbers reported at some locations may possibly include a new look-alike moth (see last week's article). Due to the hot weather and a strong first flight, we would expect a healthy second generation, though numbers remain low - dry conditions may have affected emergence or flight activity. Weekly silk sprays are recommended where ECB flight is greater than 12 per week. Scout pretassel fields for new ECB larvae and for fall armyworm.

Location	Z1	EII	Total ECB	CEW	FAW
Western MA					
CT Valley					
Deerfield	1	2	3		
South Deerfield (1)	0	3	3	0	
South Deerfield (2)	1	7	8		
Sunderland	3	20	23	0	2
Hadley	0	9	9	3	
Feeding Hills	4	15	19	10	0
Central & Eastern MA					
Spencer	0	7	7	2	0
Dracut	1	4	5	1	0
Tyngsborough	0	5	5	0	0
Lancaster	0	3	3	4	0
Harvard	0	0	0	3	
Concord	1	4	5	0	0
Millis	0	0	0	3	
Sharon		0		6	
Northbridge	0	11	11	2	1
Rehoboth	0	25	25	2	
East Falmouth	1	0	1	0	0
Barnstable	1	0	1	0	0

Corn Earworm Threshold		
Moths/Night	Moths/Week	Spray Interval
0-0.2	0-1.4	no spray
0.3-0.5	1.5-3.5	every 6 days
0.6-1	3.6-7	every 5 days
1.1-13.0	7.1-91	every 4 days
Over 13	Over 91	every 3 days

Vegetable Notes. Ruth Hazzard, Amanda Brown and Andrew Cavanagh, co-editors. Vegetable Notes is published weekly from May to September and at intervals during the off-season, and includes contributions from the faculty and staff of the UMass Extension Vegetable Program, other universities and USDA agencies, growers, and private IPM consultants. Authors of articles are noted.