



UMASS
EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts



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CROP CONDITIONS

This week brought warmer than normal temperatures with very little rain. East and southeast regions of the state are drier than the west, but all fields could use some rain at this point. Irrigation systems were hauled out this week. Humidity remains relatively low, and cool nights (45-55 F) discourage foliar diseases such as early blight of tomato and potato and bacterial leaf spot of pepper. Growers continued planting cucumbers, late sweet corn, beans, lettuce, other greens, and late season brassicas, and transplanting cucurbits. Harvest is gaining momentum in summer and zucchini squash, and continues in peas, beets, radishes, lettuce, broccoli, Chinese cabbage, bok choy, strawberries. Cultivation, hoeing and top-dressing crops were major activities this week. Potatoes fields are starting to flower and are being hilled up. Earliest corn is forming ears, with likely first harvest in time for the Fourth of July holiday weekend. What a contrast to one year ago, when everything was behind by a week or more. New pest reports included spider mites in greenhouse eggplant. Watch for arrival of powdery mildew in early zucchini.

TWILIGHT MEETING REMINDER:

THURSDAY, JULY 1

Somers, Connecticut

6:00 p.m. Pineroft Farm. The tour will start at the packing house where we'll enjoy a quick bite to eat and get to see the cold storage facilities, hydro-cooler, vegetable sorters, loading dock, 4-row sweet corn picker, irrigation reels, conveyor belt harvesting aids, high-crop sprayers, bed-makers, etc. We will then head out to view the plasticulture systems for most of their cucurbit and solanaceous crops. This year, instead of using floating row covers on their early sweet corn, they planted in double-row trenches under clear plastic mulch. Pineroft also does a great job of water management, critical to control Phytophthora blight. Jude Boucher will describe production and pest management practices used on various crops.

Directions to Pineroft Farm: Take I-91 north to Exit 47 for Route 190 (east). Take Route 190 east for approximately 5 miles and watch for the Knights of Columbus Hall

(blue roof) on the right. Directly across from the KC Hall, take a left onto Hulbert Road. Proceed to the stop sign at the end of the road and take a right onto Four Bridges Road. Pineroft's packing facilities are about 1/4 mile up on the left. If you're coming from the east on Route 190, Hulbert Road is 1-2 miles east of the center of Somers.

FAVA BEANS (*Vicia Fava*)

Fava beans are legumes that grow well in cool weather and have been grown in Massachusetts since the arrival of the Italians and Portuguese. Favas are from the Mediterranean area and are popular among peoples from that region of the world. Fava beans, also known as broad beans and habas in Spanish, are grown for their enlarged, succulent, immature seed. The most common variety grown in Massachusetts is "Windsor" which many seed companies carry.



Photo of fava beans growing in Massachusetts on June 22.

Ken Araujo of Araujo Farm and Greenhouse in Dighton Mass. used to grow about 1/4 acre of favas when he was selling at farmers' markets and doing more direct marketing to Portuguese stores. At farmers markets, he said people would come with trash bags to buy their favas. He would plant as soon as the land could be worked after St. Patrick's Day and would also start transplants in his greenhouse to be set out in early April. In addition to a change in his marketing, he said that increasing aphid pressure was a reason why he stopped growing them (see photo). The aphid prob-



Aphids on fava beans growing in Massachusetts

lem didn't seem to affect yield as much as it was a cosmetic problem at the point of sale.

Portuguese markets in Massachusetts will sell fresh favas in the spring and early summer when they are available and carry dried or frozen favas year-round. Among the Portuguese, fresh favas are preferred. They cook them with Portuguese sausage or chicken. Dried favas, which have a different taste,

are cooked with Portuguese sausage, onions, and peppers for a dish served as an appetizer at Portuguese feasts. The dried favas are also used in soups with collards.



Pods of fava beans

Massachusetts, which has the largest Portuguese-speaking population in the US, has three distinct Portuguese-speaking groups: Portuguese, Brazilian, and Cape Verdean. Portuguese and Cape Verdean use favas while Brazilians do not.

*-Frank Mangan and Maria Moreira
Photos: Frank Mangan*

SWEET CORN UPDATE, JUNE 24

European corn borer (ECB): the peak flight for ECB first generation moths is over. Captures dropped at nearly all sites this week by 40-50%. However, most areas still have captures above 10 moths per week. Silking corn that was never sprayed in tassel should be sprayed in early silk unless ECB pressure is known to be low. In corn that has been in silk for over a week where flights are >10 moths

per week, a second spray a week after any previous spray is recommended. For corn just reaching pretassel stage, scout for young larvae in the emerging tassel to determine the need for sprays. The threshold for ECB and armyworms at tassel emergence is 15% infested plants. Best control is achieved when sprays are applied just as the green tassels poke up out of the whorl. At this time, ECB larvae move downward out of the tassel and are easily reached by sprays. Check the block again after 3-4 days to see if there is still fresh feeding or live larvae in >15% of the tassels.

Town	Date	ECB Z1	ECB E2	Total ECB
<u>CT river valley</u>				
S. Deerfield	6-23-04	3	3	6
N. Hadley	6-23-04	23	11	34
Hatfield	6-21-04	25	67	92
Hadley	6-23-04	92	5	97
<u>C.& E. MA</u>				
Dighton	6-21-04	11	15	26
Still River	6-22-04	13	11	24
Seekonk	6-23-04	5	13	18
Sharon	6-23-04	159	9	168

No **corn earworm** was captured this week in traps set up in the CT Valley. It is definitely time to get CEW traps up! More and more farms have corn approaching silk stage. It's best to have a CEW up before silk starts! Spend \$70 on a trap and lures, and save yourself hundreds in losses from wormy corn that you sprayed too late after a flight arrived! Use the *Heliothis* net trap and place the trap in freshly silking corn with the base at ear height. There are many brands of lures; Hercon lures (for corn earworm, *H. zea*) have proven extremely reliable for years. Two sources for traps and lures: Great Lakes IPM (1-517-268-5693) and Gemplers (1-800-382-8473). Using two traps per farm allows you to move one into a block of fresh silk each week.

This is a great time of year to use selective materials that are easy on beneficials because you are targeting only ECB which is effectively controlled by these materials. Both spinosad (Entrust, Spintor 2SC) and Bt (e.g. Dipel DF) will control ECB; however spinosad is more consistent in published research trials where it gives levels of control equivalent to synthetic pyrethroids such as Warrior. For growers using Bt, a spreader sticker is recommended. Organically allowed spreader stickers include NuFilm 17. Since this is the time of year when aphids show up in sweet corn, and when the beneficials that feed on them are also building up in your crop, you will gain from using a selective insecticide that will leave those helpful biocontrol agents alive and hungry after you spray. You will gain now, but especially this could benefit you later by preventing hard-to-control aphid outbreaks later in the season.

The sweet corn crop is growing really well – progressing ahead of normal schedules (if there is such a thing in New England) and weeks ahead of last year’s corn. Farmstands who look to sweet corn growers in Hadley and nearby towns in the CT Valley for fresh fourth of July corn will probably not be disappointed this year.

POTATO

Beetles are still pumping out new egg masses in potato and hot weather ensures rapid hatch and fast larval growth. This means growers need to stay on top of new flushes of beetle grubs and apply controls before they reach large size. Note that some insecticides used for CPB will control leafhopper (including Admire, Provado, Platinum, Vydate, Asana, Baythroid) but others will not (spinosad, Bt and abamectin). Insecticides that are labeled for leafhopper, but not CPB, include include Sevin, Lanntae, Dimethoate, and Pyganic. Growers using pyrethrin (Pyganic) may find better efficacy if sprays are applied in the evening, to reduce degradation by sunlight.

European corn borer infests potato vines and may show up at this time. Feeding damage shows up as tunnels in the stems, which cause collapse of individual vines. Studies that look at yield loss have showed that ECB infestations do not cause yield loss in potatoes in Massachusetts.

-R. Hazzard

SPIDER MITES IN VEGETABLES

Spider mites can occur in tomato, eggplant, potato, vine crops such as melons, cucumbers, and other crops. In most instances, infestations are largely confined to drier dusty areas along roads and field margins, although there have been some reports of more extensive infestations. Occurrence is spotty and damage is low to moderate in most cases. An outbreak of two-spotted spider mites was observed this week in a greenhouse-grown eggplant crop. Hot, dry weather favors spider mites and also exacerbates their effects on plants. Although we have not had any reports of field infestations, we are sending out information on spider mites and encouraging growers to keep an eye out. Scout by checking undersides of leaves for symptoms, webbing, or (with a 10X hand lens) the mites themselves.

The two-spotted spider mite is the most common species that attacks vegetable and fruit crops in New England. Mature females have a pale yellow green or red oval body with pale legs. They have a dark green spot on either side of the body, which gives the mite its name. These can be seen with a 10X hand lens. Nymphs may not have spots. All life stages spin webbing over the foliage, which protects the spider mites from predators, pesticides, and water loss.

Mites also migrate by spinning a long strand of silk and ballooning on the wind. The European red mite also attacks vegetables and fruits. A d u l t females are brick red c o l o r e d with distinct white tubercles located at the base of several white bristles on their back. Adults are about 1/60 inch long. Mites are more closely related to spiders than to insects and generally have eight legs except when just hatched, when they have six legs like insects. Males are oblong in shape while females are more round.

Mites generally injure above ground plant parts by piercing and sucking plant sap or cell contents with their needle like mouthparts or stylets. Sap removal can debilitate plants by removing nutrients and water. Removal of cell contents results in leaf injury and fruit scarring. Saliva injected during feeding contains enzymes and other substances that may produce toxic responses in plants, producing discoloration, necrosis or abnormalities on leaves, stems and fruits. Damage is often underestimated since the wounds they make are not apparent to the eyes of the observer. These pests are particularly bothersome in dry weather since they account for added strain on plants, already short of moisture.

Spider mites are favored by hot dry weather, which also aggravates injury by stressing the plant. Leaves become blotched with pale yellow, reddish brown spots ranging from small to large areas on both upper and lower leaf surfaces. If infestation is severe, leaves become pale and sickly in appearance, gradually die, and drop off the plant. Before death the leaves look as though they have been dusted with some sort of powder, which is caused by numerous molted skins of the mites coupled with a depletion of leaf chlorophyll.

Overall plant symptoms caused by either severe or constant attack are characterized by distorted leaves, overall loss of plant vigor (in spite of adequate moisture and nutrition), spotting of leaves, eventual yellowing of the plant or some of the leaves, and in some cases loss of foliage and death. In the case of fruit or pods the piercing-sucking group causes off-color spots or wart like growths (tomato), pod drop (beans), and fruit curvature of the fruit (okra, melons etc.).

Almost all types of crops are subject to attack by some species of spider mite. Mites are also severe pests of plants grown inside or in greenhouses. The first outbreak of mites in a field generally occurs around barns, fences, trees, or some obstacle in the field acting as a windbreak. A good indicator of spider mite buildup is often the presence of bleached out looking nightshade plants at field margins and waste areas. Spider mites reproduce rapidly under favorable conditions, and control can be difficult. See the 2004-2005 New England Vegetable Management Guide for recommendations for mite control on vegetable bedding plants (see P. 57), greenhouse tomatoes, or field grown crops.



Spider mite damage on eggplant

Biological control with predaceous mites that can be purchased commercially is a viable option for greenhouse crops, but must be initiated before populations have a chance to build up. *Amblyseius fallacis* is an effective mite predator which is commercially available. Research in Michigan fruit crops indicated that a predator-to-prey ratio of at least 1:10 presents a good probability of biological control. In assessing the need for chemical control, consideration should be given to the age structure of the population. A high nymph to adult ratio signals a population likely to increase, whereas numerous adults may signal a declining population. If chemical control is deemed necessary, care must be taken to select an appropriate miticide and thoroughly cover the plants. A second application should be applied from five to seven days following the first, to kill mites that were eggs at the first spray. If more than five to seven days are allowed to pass after the first application, new females will have matured and laid eggs again. Therefore, a second spray kills the nymphs before they reach maturity and lay eggs, which in turn would provide for a new generation.

-- Ruth Hazzard, UMass Extension

CUCURBITS

Early summer squash and zucchini harvest is starting. Butternut, other winter squash and pumpkin is growing well. Striped cucumber beetles are still entering fields but the numbers and intensity of new arrivals seems to be slowing down. New transplants and newly germinating vine crops may still be subject to injury, and should be scouted. If you find more than one beetle per two plants in wilt-susceptible crops or one beetle per plant in crops that are less susceptible, a spray is recommended. In PTC butternut fields, we are seeing piles of beetles around sprayed or Admire treated blue hubbard trap crop borders with below-thresh-

old numbers in the main crop. Admire-treated seeds and transplants and trap crop borders appear to still be providing control in most cases. One exception was zucchini plants now reaching flowering stage that were treated as transplants several weeks ago, where low numbers of late-arriving, lively beetles have been observed. However, as plants grow past the 5 leaf stage and on toward flowering, the thresholds for control cucumber beetles no longer apply. After flowering, control is needed only if severe injury is occurring to leaves and flowers – which is rare, if control was adequate earlier.



Dead striped cucumber beetles pile up under Blue Hubbard perimeter trap crop that was sprayed with Sevin, Boisvert Farm, Hadley, MA

Squash bug has arrived in vine crops. Mating pairs are common – eggs can be expected soon! These are difficult to control, but only in certain situations do they cause significant injury. More on this next week!

For early zucchini and summer squash, watch for arrival of powdery mildew. One tiny spot was found by an observant scout last week... but none this week. Crows can be damaging to transplants or young seedlings at the cotyledon or 2-3 leaf stage – pulling the plants up and leaving them to wilt and die. Scare-eye balloons can make a difference and are available at pest management and sprayer supply stores.

-R Hazzard, P Westgate, A. Cavanagh, T Andenmatten.

Vegetable Notes, Ruth Hazzard, editor and Ben Hunsdorfer, Assistant Editor. Vegetable Notes is published weekly from May to September 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; author is R. Hazzard if none is cited.

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