



UMASS
EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts



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CROP CONDITIONS

Heat has moderated, and the cool nights and low humidity are a welcome relief. Cool nights can bring slower production of squash, but cooler, less humid conditions also slow the progress some disease and insects. It's getting a bit dry, rivers are running lower, and more crops are needing irrigation. Harvest of fruiting crops is gaining momentum, and quality is good. Eggplants have loved the heat. Some fall vine crops are moving toward maturity, although plenty are still setting fruit. *Phytophthora capsici* has showed its ugly head in some cucurbit fields, and growers have sacrificed the infected sections by plowing or removing the crop, in an attempt to save the rest.

Weeds are busy making seeds at this time of year. Where they got away from you before harvest, try to knock them down by mowing or disking as soon after harvest as possible.

Some growers have commented on poor broccoli quality thus far this season. Late summer/early fall broccoli has definitely suffered some heat. Come to Brox Farm in Dracut next Tuesday, August 15 to hear about broccoli, sweet corn, drip irrigation, and some new crops for ethnic markets; to take a break to see another farm and other growers; as well as earn some PAT credits!

SWEET CORN UPDATE

This week **fall armyworm** showed up in high numbers in pheromone traps at some sites, but as usual FAW captures were not consistent across the state or even in a single region. Many sites have low trap numbers. Damage seen in scouted fields is localized and some is old damage. Remember to only count live worms as new damage when scouting. Lots of times you will see old feeding damage where worms have either been killed from a previous spray or have moved into the soil to pupate, in which case you will not need a second (or maybe even a first) application. Most of the fields we scouted this week in the Connecticut Valley were not over threshold after last week's applications. However, in some fields that were sprayed once we found new hatch and first and second instars feeding, which has forced some growers to apply a second spray for clean up. In one field where the grower tested the selec-

tive insecticide indoxycarb (Avaunt), the infestation level dropped from 30% last week to 6% this week. Another selective product, Spinosad (Spintor or Entrust) can also be used against FAW. It is important to clean up FAW before the silk stage to prevent tunneling into the side or tip of the ears.

Although damage from FAW is pretty obvious, caterpillar identification is also important. FAW small larvae can be found feeding in the rolled up whorl where feeding occurs. Tassel damage is more obvious and larger caterpillars can be seen easily. Look for a smooth body that is green or brownish in color with stripes up to 1 ½ inches long. A dark head capsule can be seen with a characteristic inverted Y in light tan or white on the forehead. Scout whorl stage corn in groups of five and when 15% or more of the plants are infested an application can be made. Scouting for European corn borer can be done at the same time and in the same manner.

European corn borer second flight is picking up in some areas and dropping off in others. Scout pretassel and green tassel corn for feeding larvae. Where flight is over 7 moths per week maintain a 6-7 day spray schedule in silking corn. The same schedule should be maintained where **corn earworm** is 2-3 moths per week. Though we are not seeing a large influx of CEW, there are low to moderate numbers present. In the Southeast, growers can be on a four day schedule (1.1-13 moths per night), and in many areas a five day schedule is adequate (0.6-1 moth per night). If you have pheromone traps make sure that you move them to fresh silk to get an accurate measure of CEW activity. In silking corn, Baythroid, Warrior and Larvin are good for high pressure corn earworm situations; Spintor is good for ECB in silk and for low or moderate levels of CEW. Keep checking your traps twice a week so you don't have a surprise attack from a CEW infestation in your silking corn. Numbers can reach alarming levels overnight when weather fronts move up the coast from the South.

Corn leaf aphids are present, but in fields we scouted they were being adequately controlled by natural predators. **Sap and picnic beetles** are secondary pests that are attracted to damaged plant tissue. They may also be seen feeding on silk and tips of ears that are exposed, especially the super sweet varieties. Most of the sprays used for cat-

epillar control will take care of these beetles, though high populations can be challenging. Some other beetles may show up but are not generally damaging unless they reach high levels.

Overall sales of sweet corn seem to be strong and some growers have been able to keep their retail prices up at \$4.50 a dozen or higher since the beginning of the season.

--Amanda Duphily, Kate Reidel, Ruth Hazzard

•Weekly European Corn Borer and Fall Armyworm and Nightly Corn Earworm Trap Counts:

Location	Z I	E II	CEW (per night)	FAW
Sheffield	3	19	0.43	-
Pittsfield	-	-	0.14	-
S. Deerfield (UMass)	3	83	0.20	8.5 avg
Deerfield	43	187	0.60	45.5 avg
Whately	1	9	1	-
Hadley (1)	36	15	1.57	-
Hadley (2)	9	3	3.33	21
N. Hadley	14	59	0.83	3
Sunderland	2	3	0	2
Easthampton	10	0	0.33	8.5 avg
Feeding Hills	5	31	3.28	0
Still River	4	12	0.78	-
Rehobeth	20	11	1	0
Seekonk	-	-	6.71	63
Concord	5	3	0.43	1
Leicester/Spencer	3	8	0.43	1
Northbridge	2	31	0.85	3
Tyngsboro	23	5	0.28	0
Coventry, RI	-	-	9.6	-
Mason, NH	0	1	0.14	1
Hollis, NH	2	58	1.57	7
Litchfield, NH	2	15	2.28	41

European Corn Borer Thresholds

Pre-tassel-Silk: 15% or more of plants scouted are infested .

Silk: 5 or more moths caught in pheromone traps in one week, or 5% of plants are infested.

Corn Earworm Thresholds

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

Corn Earworm thresholds apply only to silking corn up to 5-7 days before harvest. Lengthen spray intervals by one

day if maximum daily temperature is less than 80 degrees F.

Fall Armyworm Spray Thresholds for Pheromone traps and Feld Scouting

Whorl Stage: 30% or more of plants are infested

Pre-tassel stage to emerging tassel 15% or plants are infested (add # plants infested with ECB)

Silk: 3 or more moths captured per trap per week: Spray silk every five to seven days; five days if captures continue to be over 3 moths per week.

--Thanks to our scouting network: R.Hazzard, A.Duphily, K. Reidel, J.Mussoni, D.Dumaresq, D.Rose, J.Otto, T.Gallagher, J.Golonka, W.Kingsley, P.Willard, G.Hamilton, C. Leich, B. Howden, S. Clegg, J. Ward

ONION THRIPS IN LATE BRASSICAS AND ONIONS

Thrips has been observed in late Brassica crops, including cabbage, broccoli and Brussels sprouts. On one particular farm these crops were planted next to all the alium crops including onions, leeks, garlic and scallions. Both are suffering damage. Some alium crops are mature or nearly mature and will not be affected – but as they dry up, thrips very likely find the late Brassicas to be an attractive feeding site. Thrips also like hot weather. We recommend checking both these crops for a late-season infestations, especially if the two crop groups have been planted close to each other.

Onion thrips attack onions and other crops in the onion family as well as cabbage family crops. They are tiny insects, which feed primarily at night and hide during the day. They have rasping mouthparts. They feed by abrading the leaf epidermis and then drinking the liquid from the leaf tissues. On onions, feeding injury appears as silvery blotches on the leaves. If injury is extensive, the leaves produce less food and this reduces the size of the bulbs. Feeding



Thrips Nymphs (Photo by John Sanderson, Cornell University)

injury makes scallions and green onions unmarketable.

In crucifer foliage, feeding damage shows up as white or bronze mottling on the upper surface of the leaf, and a mottled bronzing or scarring on the lower surface. Severe feeding damage causes the whole plant to look off-color and stunted. On cabbage heads, feeding results in small wounds, which heal over forming raised corky areas, which resemble edema. This is unsightly and can make heads unsalable. Thrips must be controlled before heads form.

These insects multiply rapidly in hot weather and populations can get out of control rapidly. Scout onions by spreading the leaves and looking for thrips, which have been hiding between the leaf sheaths. To the naked eye they look like a small speck of dirt, but they crawl around as soon as they are exposed to light. The young nymphs are light in color and the adults are nearly black; both are elongated. Adults move around more nymphs, and have wings that appear to be fringed. Cornell University recommends that an insecticide program be initiated when there are three thrips per green leaf on dry bulb onions and one per green leaf for Spanish and green bunching onions. For best results a wetting agent should be used. High gallonage (100 gpa) and high pressure (100 psi) are important for good thrips results. Since many insecticides are degraded by sunlight, applications should be made in the evening when the insects are crawling up on the foliage to feed.

Thrips populations are often greatly reduced by heavy rainstorms. Overhead irrigation can also reduce populations. Populations will reestablish themselves at some time after the rain event. The interval will be affected by temperature. Some of the older onion varieties with more spreading leaves are somewhat resistant to thrips.

Refer to the *New England Vegetable Management Guide* for recommended materials, which include the traditional pyrethroids, carbamates, and organophosphates. Biorationals (“softer” materials) for thrips include spinosad (Spintor 2EC and Entrust, which are labeled for Brassica vegetables, but not for onions), which has a reputation for working very well against thrips in greenhouse situations. Azadiractin (Neemix, Ecozin 3%) is labeled for control of thrips in both onions and crucifers. Surround WP and Pyganic are two OMRI listed products which are labeled for use against thrips in onion.

--John Howell, Stephanie DeGray & Cornell University

PHYTOPHTHORA CAPSICION BEANS

In 2002, *Phytophthora capsici* was reported on lima beans in Delaware. In 2003 through 2005, *P. capsici* was reported on string beans in Michigan. Symptoms included leaf blight, stem rot and pod rot. These occurred in land previously planted to cucurbits that had also been attacked

by *Phytophthora*. Pathogenicity tests confirmed that these isolates were pathogenic to cucurbits and beans. Apparently, strains of the organism are being selected that are pathogenic to bean. We recommend that you do not rotate legumes of any kind in fields that have a history of *Phytophthora capsici*. Please send in any beans suspected of having this disease to the plant disease diagnostic lab in 108 Holdsworth Hall.

-- Rob Wick, UMass Plant Pathologist

PLANT DISEASE DIAGNOSTIC LAB – EASY TO USE!

Proper identification of disease is critical to knowing what to do and when to do it to manage vegetable crop diseases. Symptoms of different diseases – as well as nutrient deficiencies and insect damage -- may look very similar, but the management choices that work may be very different. A correct identification can save a lot of money – both in pesticide costs, and in fewer losses in the crop. Call the UMass Plant Disease Diagnostic Lab in 108 Holdsworth Hall (413-545-3208 or 545-3209) to discuss your problem.

Growers tell us that the main reason they don't get a diagnosis is lack of time to get the sample sent off. To make it easier, we have put together prepaid diagnostic kits with everything you need to send off a sample in ten minutes. Pay in advance (\$50 per sample) and be ready for a quick diagnosis! Kits include: 1) Mailing label 2) Sample Submission Form 3) Sample Submission Guidelines 4) Plastic Bag and 5) Box (if picked up on site). Boxes generally are in good supply on most farms, but the rest takes time to assemble.

Make it easy for yourself in this hectic time to get a correct diagnosis! Take your sample, bag it, and place it in the box; fill out the case history form; put on the label and mail it overnight to the diagnostic lab. Your diagnosis and report are all paid for. The report will come to you by phone, mail, email or fax—whatever works for you.

Want to order? Questions? Call Bess Dicklow, Vegetable Disease Diagnostics, at 413-545-3209 or email mbdicklo@umext.umass.edu.

TOMATO INSECTS TO BE LOOKING FOR

Brown stinkbugs. This is the time of year when adults are present and moving around in search of food and egg laying sites. In NJ, feeding has been very low infield tomatoes, but much higher in high tunnels. Tomatoes are a favored host, especially if dry weather reduces the availability of native host plants. Now is the time to pay attention to fruit in the field for signs of feeding. Stinkbug feeding on tomatoes first appears as a diffuse whitish blotch on green fruit. The spot changes to bright yellow as the fruit matures.



Stinkbug (Euschistus spp.)

If this feeding is on the increase in the field or in harvested fruit, consider treating to suppress the population. The stinkbugs are hard to find, and it is more likely that you will see feeding injury than the bugs themselves.

Thrips. These insects may often be detected by tapping

fresh flower clusters over an index card. If fields are scouted regularly and an upsurge in thrips numbers occurs in flower clusters, consider treating to minimize subsequent fruit injury. Later in the life of the crop, observe fruit for the presence of gold colored flecks on ripening fruit. These flecks are from thrips feeding and often form trails or patches on the fruit surface. If this injury is increasing, consider treating for thrips. Foliar feeding may occur under heavy thrips pressure. This feeding appears as small necrotic patches on leaves with small black dots (droppings) in or near the patches. The tiny, yellow thrips should be easily observed on leaves if the population is this heavy.

Check fields for **aphids** and **two-spotted spider mites** (TSSM). Look at 2 complete leaves each on 5 consecutive plants in 10 random locations. Note the presence of aphid colonies on the undersides of the leaves, as well as the presence of TSSM. Increasing aphid populations are often detected by the presence of their cast skins, which adhere to the sticky droppings they produce. Do not treat at the first sign of aphids; come back and check again. If colo-



Two Spotted Spider Mite Damage

nies are increasing over several scouting visits, especially if aphid droppings are accumulating on fruit, consider an insecticide to reduce the population. TSSM feeding results in a whitish pin spot, or stipple, on the upper surface of the leaflet. The mites will be on the underside of the leaf until colonies become large. At this point, they will make webs and travel between leaves. Note the number and location of sites with TSSM. Consider spot treating to prevent further spread into the field.

When applying fungicides to limit foliar disease, remember to include a copper product in the rotation if a bacterial infection is suspected. Symptoms include necrotic spots or leaf margins (common to **bacterial speck, spot and canker**), as well as stem lesions (canker), dark fruit blisters (speck), dark scabby fruit lesions (spot), and fruit blisters with light halos (canker). Avoid fields when foliage is wet. Always work from the youngest planting to the oldest to avoid introducing bacterial pathogens to the younger plants.

--Adapted from: Robert Precheur VegNet Vol. 13, No. 14, August 3, 2006 Ohio State University Extension Vegetable Crops and Plant & Pest Advisory, Vegetable Crops Edition, August 2, 2006, by Gerald M. Ghidui, Ph.D., Specialist in Vegetable Entomology, Rutgers Cooperative Research & Extension at the New Jersey Agricultural Experiment Station

ARE PHOSPHATES THE SAME AS PHOSPHITES?

There has been some confusion lately over terms used for fertilizers and chemicals containing phosphorus. Growers have been using phosphate fertilizers for generations and are familiar with formulations like super phosphate, triple super phosphate and diammonium phosphate. All of these materials provide phosphate derived from phosphoric acid (H3PO4). The phosphate that plants use is in the form



Stink Bug Feeding Injury on Tomato Fruit

HPO₄ and H₂PO₄, which is quickly converted in soil from phosphoric acid fertilizers. Recently, new terms are being used including phosphorous acid (not phosphoric acid), phosphite (not phosphate), and phosphonite. Unlike the fertilizer phosphate that contains four oxygen atoms, phosphoric acid and the related compounds contain only three oxygen atoms. That difference of one atom is very important and growers need to be aware of that as they develop their fertility and disease management programs.

Phosphorous acid compounds (we'll include phosphite and phosphonite in this group) play an important role in agriculture as they are the active ingredient in materials like ProPhyt and Phostrol. These pesticides are useful in combating diseases like Phytophthora rot on tomato, pepper, and vine crops. The problem is some of these compounds are labeled as pesticides, which required the manufacturer/distributor to spend the time and money to register the compound. Others are advertised as fertilizers, which of course bypasses the registration process. These phosphorous acid compounds, although active against some fungal diseases, do not provide any phosphorus nutrition to the plant. Plants can absorb these compounds through roots and leaves and once in the plant, the phosphorous acids compounds are very stable. Because the compounds lack one oxygen atom compared to the traditional phosphate molecule, plants are incapable of using the phosphorus acid as a nutrient source. The phosphorous acid compounds can break down in the soil to available forms of P, but this process is very slow and will not provide adequate P nutrition. Studies have shown that applications of phosphorus acid compounds to plants grown on soils with moderate to low levels of available P can actually induce a P deficiency.

The bottom line is that phosphates are what's needed for fertilizer but will have no effect on plant diseases like Phytophthora. Phosphites are useful in managing diseases but will not provide plants with the phosphate they need. Knowing the difference can save you money.

--By Dr. Steve Reiners, Cornell University. From: Vegetable IPM News, Cornell Cooperative Extension, Vol. 11 Number 5 Late July, 2006

UPCOMING EVENTS AND TWILIGHT MEETINGS

1. 32nd Annual NOFA Summer Conference Thursday August 10-Sunday August 13, 2006

The Northeast Organic Farming Association (NOFA) is holding its 32nd annual summer conference August 10-13, 2006 in Amherst, Massachusetts on the grounds of Hampshire College.

This year's pre-Conference, "Sprouting the Seeds of the Next Generation: Food and Farming Education", is being held from 1 to 5 p.m. on Thursday, August 10th and 8 a.m. to Noon on Friday, August 11th. Along with the pre-conference, there will be over 200 additional workshops, as well as the cherished NOFA tradition of the Saturday Country Fair.

Visit the Website!

Check out www.nofamass.org and click on the Summer Conference link to learn all about this year's event and to register online!

On-site registration is possible, as well.

For more information, contact NOFA Summer Conference Coordinator Julie Rawson at (978) 355-2853 or nofa@nofamass.org. Registration forms are also available at nofamass.org.

2. Massachusetts Tomato Contest to be Held August 21

The 22nd Annual Massachusetts Tomato Contest will be held at Boston's City Hall Plaza Farmers' Market on Monday, August 21st in conjunction with the City Hall Plaza Farmers' Market and the start of Massachusetts Farmers' Market Week. For complete details, including contest criteria and a registration form, go to: http://mass.gov/agr/markets/tomato_contest.htm

The 22nd Annual Tomato Contest is sponsored by the New England Vegetable and Berry Growers Association and Massachusetts Department of Agricultural Resources. For more information, contact David Webber at (617) 626-1754 or david.webber@state.ma.us.

3. Farm Pond Construction- A Twilight Meeting August 12, 2006 Four Star Farms in Northfield, MA

Eugene and Nathan L'Etoile will discuss their project of aquaculture pond construction. Also presenting will be Michael Marcus, senior scientist at New England Environmental and expert on pond construction; aquaculturist Keith Wilda; and Donald Wilda, USDA/APHIS wildlife biologist. Discussions will include permit requirements, site selection, pond construction techniques and predator protection. For more information, contact Craig Hollingsworth at (413) 545-1055, or e-mail Craig at chollingsworth@umext.umass.edu.

You may also visit <http://www.umass.edu/aquaculture>.

4. 2006 New England Greenhouse Conference Wednesday-Friday November 1-3 Worcester, MA

Workshops include plant nutrition, alternative energy, growing vegetables in greenhouses, and more. For more information, contact: Cindy Delaney at (802) 655-7769 or visit www.negreenhouse.org

Vegetable Notes, Ruth Hazzard, editor and Kate Reidel, Assistant Editor. 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; author and photographer is R. Hazzard if none is cited.

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