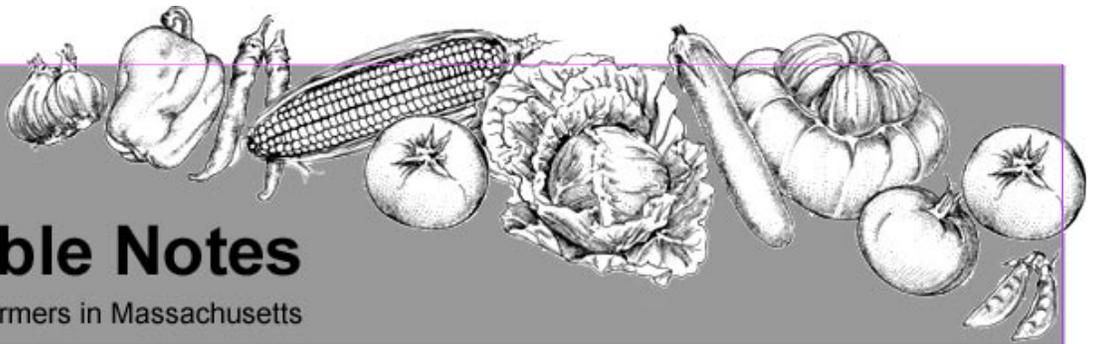




UMASS  
**EXTENSION**



# Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 16, Number 15

August 11, 2005

## CROP CONDITIONS

Extremely dry, hot conditions continue and drought is affecting more and more areas of the state. Southeastern Mass has not seen rain except for a few scattered thunderstorms, since late June or early July. We have seen soaking rains come through on thunderstorms in some parts of the state, but the transpiration of crop plants and evaporation in the baking heat take water out of the ground in a hurry. Irrigation is a constant, and fields without irrigation are going to see a significant crop loss especially in the Southeast. Dry fields show wilting vines and curling corn in the knolls and sandy spots. Where crops get enough water, they are growing fast. Peppers are sizing up well, eggplants like the heat, and tomatoes are in full swing. Sometimes corn harvests from different planting dates have bunched up, resulting in harvest gaps. Trade among growers from different parts of the state helps everyone keep their farm stands full of the full range of crops.

The up side of dry conditions is low corn earworm flights, because the weather pattern has not included northward-moving coastal storms - yet. Vine crop fruit development is good where there has been enough water, and there may be some early maturing crops. Try to plan for harvest and storage of pumpkins and winter squash as soon as they are ripe because those hurricanes are sure to come.

## EGGPLANT: WATCH FOR CPB

The last larvae of the first generation may still be chewing on eggplant or potato, at the same time that the new summer adults are emerging. The economic threshold is not



*CPB full-grown larvae and damage on eggplant*

well established, but significant loss of leaf tissue or buds can reduce yields. CPB pupate in the soil and leave small holes in the soil as the adults emerge. Adults will be soft-bodied for a day or two after they



*CPB emergence hole and adult next to plasitic*

emerge. New adults emerging after about August 1 will not produce eggs, but they will eat before leaving the field to overwinter. Adults and larvae leave their excrement (frass) on the leaf surface.

## SWEET CORN UPDATE

Corn earworm counts are running remarkably low for this time of the season, and growers can extend spray schedules as a result. Where weekly CEW moth counts are above two and below 7, growers can use a five day spray schedule on silk. The few sites where counts are above 7 per week need to be on a four day schedule. Nowhere in the state, at this time, requires a three day schedule on silk, which is some kind of record for August 11. Lack of air movement from the south has kept major flights out of the region. This is the good news that comes with dry weather. Time spent irrigating makes up for those hours on the sprayer.

These spray schedules will also control fall armyworm and European corn borer, which are active throughout the state. ECB flight is still rising or holding steady, well above the threshold of 7 moths per week that would trigger a weekly spray on silk. The exceptions are sites in Brandon VT and Sheffield MA where captures were 4 or below.

Whorl and pretassel stage corn are showing fall armworm damage and larvae. FAW moths are being captured in the bucket traps (Multiplier or Unitrap) baited with the 'Penn State' FAW lure. If you are using traps, make sure to use a vaportape strip to kill moths and keep them in the trap.

Most are a low numbers, but catching any FAW moths will be accompanied by some whorl damage. Non-target moths can confuse the count in all of the pheromone traps. Gypsy moths are darker brown than FAW, ECB or CEW, and have feathery antennae. None of our corn pests have feathery antennae.

Scout your whorl and pretassel corn and use the 15% threshold of combined caterpillars. ECB larvae are starting to hatch, but are still small. This is a good time to test out selective lower-risk alternatives to synthetic pyrethroids which will control of FAW and ECB in pre-silk corn (e.g. Avaunt) or through silking if CEW pressure is low (e.g. Spintor).

We saw some buildup of aphids in tassels. Moderate numbers do not cause damage, but outbreaks that flood the tassels and drop ‘honeydew’ onto the husks or invade the layers of the husk will reduce marketability. Methomyl (Lannate) is a good choice to clean up such outbreaks. It will control other pests as well, but may not give adequate control of high levels of CEW. Conserving predators by using selective materials is another approach.

### SWEET CORN TRAP COUNTS 8-5 TO 8-10

LOCATION	DATE	ECB Z1	ECB EII	CEW	FAW
<b>Berkshires, W. MA/ Champlain Valley</b>					
Westminster, VT	8-10	0	56	0	-
Brandon, VT	8-9	0	0	0	-
Sheffield, MA	8-9	8	4	0	-
<b>CT River Valley</b>					
Old Deerfield	8-10	31	182	4.5*	28
Hadley	8-10	17	17	3	1
N. Hadley	8-10	13	72	3.5*	-
Feeding Hills	8-9	41	9	10	2
<b>C.&amp; E. MA</b>					
Dracut	8-9	8	16	5	-
Concord	8-8	3	12	0	0
Tyngsboro	8-8	15	12	2	2
Northbridge	8-10	18	22	5	0
Spencer	8-10	20	10	0	1
Still River	8-10	1	1	6*	-
Monson	8-10	20	12	8	0
Dighton	8-10	14	-	-	-
Seekonk	8-9	-	-	15*	-
<b>N.H.</b>					
Litchfield, NH	8-9	-	-	1	2
Hollis, NH	8-9	-	-	6	1
Mason, NH	8-9	-	-	4	1
<b>R.I.</b>					
Coventry	8-9	5	5	1	-

\*Avg of 2 traps

### CORN EARWORM THRESHOLDS

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 days	3.5 - 7	5 days
1.0 - 13.0	7 - 91	4 days
Over 13	Over 91	3 days

--R.Hazzard, A.Duphily, B.Hunsdorfer, J.Mussoni, D.Dumaresq, D.Rose, J.Otto, B.Howden, S. Clegg, T.Gallagher, J.Golonka, W.Kingsley, P.Willard, G.Hamilton

### PREVENTING BIRD DAMAGE

Bird damage in sweet corn is always worse in a dry year. It is better to take action in advance of the problem, because once birds get in the habit of feeding on your corn, it will be harder to stop them! Redwing blackbirds and other birds are causing serious crop losses in some fields. There is no easy answer and no guarantee that a particular tactic will work.

#### Some general tips on repelling birds:

--Birds invade sweet corn fields about three days before picking. Time any control techniques so they are in place BEFORE harvest, and stay until harvest is complete.

--Use multiple tactics that reach more than one sensory mode. For example, combine scare-eye balloons with auditory repellents like shellcrackers or distress calls. This is likely to be more effective than using one tactic alone.

--Move devices frequently. Birds can learn and become habituated to any device that is used for a long time in one place.

--Good insect control will reduce the corn’s attraction to birds. Birds eat insects, which is good, but they also like succulent grains of sweet corn and apparently can’t tell the difference. And, they cause a lot more damage than most insects do.

--After harvest, scare devices can be removed from one block and concentrated in the next block. Some growers then allow birds to scavenge in the old block. A method that some growers say works is to rotary mow or disc the interior blocks of the previously harvested fields. Birds like to feed on the ground because it is easier than clinging to an ear, but they prefer perching nearby for protection and rest.

**Sweet corn topping.** A new technique that is being studied and tested in NYS is to ‘top’ the corn. At the 2004 New York State Fruit and Vegetable Expo in Rochester, NY, Gary Sweet, a grower from Ohio, reported that for many years he has been “topping” his sweet corn. Topping according to Mr. Sweet is the removal of the top of the corn plant from just above the silk or top of the ear, after pollen

shed and pollination. He listed the advantages of topping his sweet corn as the following: 1.) 2 to 3 days early harvesting compared to un-topped; 2) Improved picking ease (and happier pickers); 3) Reduced bird damage and 4) Reduced lodging due to wind. Other benefits may also include better spray coverage. To test this, and evaluate possible negative effects as well, Chuck Bornt and Ted Blomgren of the Capital District Vegetable Program, Cornell Cooperative Extension, completed a controlled study on two farms during the 2004 growing season. They tested it in early and late plantings, with topping at different corn stages (just after pollination, and after dried silk) and different heights (just above the ear, or with two flag leaves remaining). Topping was completed using a handheld gas powered weed wacker with a blade for different treatments. There were no yield differences except where early corn was topped low, at one site; early corn also showed earlier yields by 2-3 days. At one location where bird damage pressure was high and no other bird controls were used, bird damage was significantly reduced where topping had occurred compared to un-topped plots, which resulted in higher marketable yields. For the complete report, please visit the UMass Vegetable Program website for vertebrate pest control. ([http://www.umassvegetable.org/soil\\_crop\\_pest\\_mgt/vertebrate\\_pests/index.html](http://www.umassvegetable.org/soil_crop_pest_mgt/vertebrate_pests/index.html)).

#### **Visual scare devices:**

Eye-spot balloons and reflective mylar ribbons are effective and fairly economical for small fields. Many growers are using these silent deterrents and the general feeling is that they are fairly effective, especially when combined with auditory deterrents. Growers report that the following methods make balloons more effective: use at least 8 balloons per acre, place them in the field several days before harvest, and leave the previous block standing, without balloons, to allow birds to feed in older corn.

#### **Auditory Scare Devices:**

Exploders are gas fired cannons placed in the field and fire with automated discharge timings. These can be quite effective. Cannons are available from some agriculture supply sources. Do check with your farm neighbors and the local police to let them know what you are going to do. Cannons are very loud.

Shellcrackers are 12 gauge shotgun shells in which the lead shot has been replaced with a bulldog firecracker. When fired from a shotgun, this firecracker travels 75 to 150 yards and explodes in the air with a loud report. Use a single shot, inexpensive 12 gauge shotgun as the loads are very corrosive. Firing a few rounds early and late in the day will unsettle birds. Federal permits are not required. Again, notify local police and neighbors to let them know what you are doing. Check on local town ordinances. This method can be satisfying on a short term basis. The disad-

vantage is that it requires a person to take time in the field to discharge the shellcrackers. For a more detailed fact sheet on shellcrackers and other prevention devices, contact USDA Wildlife Services (413-253-2403).

#### **Here are three sources for shellcrackers:**

- Reed-Joseph International Co.** P.O. Box 894  
Greenville, MS 38702 (800) 647-5554
- Margo Supplies Ltd.** Site 20, Box 11, RR#6 Calgary,  
Alberta, Canada T2M 4I5 (403) 652-1932
- Sutton Ag Ent.** 1081 Harkins Rd. Salinas, CA 93901  
(866) 482-4240

#### **Distress Calls**

Recordings of distress calls or the calls of predatory birds, which repeat at regular or random intervals and operate on battery or solar-power, can be quite effective. Because flocking birds are very responsive to the signals from others in their flock, a distress call from one bird is a sign to all the others that an area is unsafe. These have become quite sophisticated, with programmable or random call intervals that help to overcome birds' ability to get used to regular sound intervals. Make sure you are using a distress call that matches the bird species you need to scare away.

#### **Here are some sources:**

- OESCO**, [www.oescoinc.com/](http://www.oescoinc.com/), 800-634-5557 or 413-369-4335. Box 540, Rte 116, Conway, MA 01341
- BirdGuard Bird Control Products**, 800-331-2973  
•E-Mail: [info@birdguard.com](mailto:info@birdguard.com), 100 State Street • Suite 312 • Erie PA 16507
- Birdbusters**, 300 Calvert Ave, Alexandria, VA 22301, phone (703) 299 8855
- Bird-X, Inc**, 300 Elizatbeth Ave., Chicago, Ill 60607 (800) 860-0473
- Gemplers'** 100 Countryside Dr., PO box 270, Belleville, WI 53508 (800) 382-8473

*--R. Hazzard and Ben Hunsdorfer  
Thanks to Chuck Bornt and Ted Blomgren  
for information on topping corn*

## **HEAT STRESS AND HEAT TOLERANCE IN BROCCOLI FOR LATE SUMMER HARVEST**

Many vegetable growers in central and southern New England avoid growing summer broccoli because head quality suffers from the heat. Some grow it all summer, but have to deal with lower quality and more head rot during the hottest part of the summer. As part of a SARE-funded project on Brassica crops, we are looking at possible variety and planting schedule combinations for a late August or early September broccoli harvest. Growers in this project see a good market potential for broccoli and would like to harvest in late summer, around Labor Day. This means the crop will begin developing heads during hot weather.



*Broccoli at the end of flower initiation stage; atiny crown is visable inside the center leaves*

Research done by Thomas Bjorkman at Cornell University, using the cultivar Galaxy, found that the critical period for heat sensitivity in broccoli only lasts for roughly ten days. This ‘window’ of sensitivity corresponds to the time when the growing tip shifts from vegetative growth to flower bud initiation. This period ends when a tiny crown becomes visible in the center of the plant. Temperatures above 35 degrees Celsius (95 degrees Fahrenheit) for more than four days during that period causes uneven bud development at the bud initiation stage, resulting in heads that were uneven and poorly shaped. Shorter periods of high temperatures did not cause injury in Bjorkman’s study.

At the UMass Crops Research and Education Center\* this summer, we will monitor two plantings of eight different varieties of broccoli to determine how quickly each variety reaches this critical period, and how long each variety takes to reach harvest after the critical period has passed. We selected varieties that are considered to have some degree of heat tolerance. These varieties include Asmodeus, Gypsy (Johnny’s), Hephathon (Noresco), F71-29A (Know-You), BL 10, Concord, Marathon (Rupp), and Windsor (Harris). We will also take harvest samples and compare the severity of heat damage across the different varieties and planting dates. This will allow us to asses the quality of each variety and planting date for a late summer broccoli harvest.

Plants that were transplanted on June 28 are just past the critical period, so they have certainly been subjected to heat stress during that stage. The second planting will reach the critical period in about two weeks, when temperatures may possibly be be cooler.

Other factors in addition to heat can cause reduced head quality and increased susceptibility to disease. These

include inadequate nutrients or improper nutrient balance. Boron deficiency increases likelihood of hollow stem, which is often not noticeable until harvest. However, hollow stem can also be exacerbated by excessive nitrogen fertilizer, imbalance of nitrogen and boron, or rapid growth after head initiation. Avoid excessive or uneven watering; try to water regularly in smaller doses. Cauliflower, turnip and rutabega are also very sensitive to boron deficiency.

For broccoli, use 2-3 lb. actual boron if the soil test level is low (0 to 3.5 ppm), or half that much if the soil test is medium (0.35 to 0.7 ppm). Conventional fertilizers can be purchased with added boron. Organic farmers need other options. Organic soil amendments such as compost or manure and cover crops may not provide adequate boron. Additional boron can be added using one of several OMRI-approved sources of boron. These include Solubor, Biomin Boron, Fertibor, Granubor and Phyto-Plus Boron and Twenty Mule Team Borax. Check with your certifier as these may be on the restricted list and there must be a document deficiency of boron in the soil for brassica crops. Solubor, and possibly other sources of boron, can be mixed in water and sprayed onto the soil surface. This is a practical way to apply a small amount per unit of area. Use a dilute enough mixture so that it is easy to cover the whole area.

Lime should probably be applied and incorporated separately. B is less available as the soil pH goes up. Work that John Howell and George Hochmuth did with cauliflower showed that B was effective only if applied just before planting. Side-dressing was of little to no value, and may cause phytotoxicity. The same is probably true for broccoli and other brassicas.

*\* new name for the South Deerfield Research Farm  
--Ruth Hazzard, Andy Cavanagh, John Howell*

## **DEER FENCING**

This week I visited a field of tomato, pepper, eggplant and assorted vine crops that was well protected from deer damage by a two-strand electric fence in an area with high deer pressure. The grower, Tim Gallagher of Coventry RI, pointed out several things that have made it work for him. He set it up before there was any feeding damage. Wherever possible he spaces the two



*Tim Gallagher connects strands of electric tape on a double fence separated by several feet*

## WATCH FOR PLECTOSPORIUM BLIGHT OF CUCURBITS

**Plectosporium blight** has been confirmed at one location in the Connecticut Valley. Growers throughout the state should pay special attention to scouting their pumpkins, summer squash and zucchini for this new disease. Plectosporium blight (Microdochium blight) caused by *Plectosporium tabacinum* (Microdochium tabacinum) was first observed

in Tennessee in 1988 and has since been reported throughout pumpkin growing regions of the United States.

The most susceptible cucurbits to Plectosporium blight are pumpkin, yellow squash, and zucchini.

*Plectosporium tabacinum* is a common fungus in the soil and on decaying plant material and is favored by warm, wet weather. The spores are spread by rain-splash and wind. Many strains of the fungus are weakly parasitic.

The fungus infects stems, leaf veins, petioles, and fruit causing light tan to bleached, sunken, spindle-shaped lesions (see photos). Initial lesions are small, but they soon coalesce and the entire surface of a stem or leaf vein turns white. Infected stems are dry and brittle. Severely infested leaves can die and result in complete defoliation. On fruit, *P. tabacinum* causes white, tan, or silver russetting which can merge to form a continuous dry, scabby surface.



*Plectosporium on the stem of cucurbit*



*Plectosporium on crown of cucurbit*



*Electric deer fence around tomato, pepper and vine crops.*

strands of electric tape on separate sets of posts about three to four feet apart, with the outer strand at a lower level and the inner strand higher. The deer cannot easily tell the distance between the two strands and are more reluctant to jump the two fences than a single fence. This is not possible along the road, where he puts the two strands on one fence. Also he encircles a concentrated area and does not extend the fence for the whole field length, but leaves a pathway between his fruiting crops and his sweet corn. He notices tracks and feeding damage on the weeds in this alleyway, indicating the deer have used it. The deer will walk around a fenced area if it is not too long.

--R. Hazzard



*The grower leaves an alley between the fence and his sweet corn, to allow deer to pass through.*

## Management

- When Plectosporium blight occurs, rotate away from summer squash and pumpkins for two years.
- Choose sunny, well drained sites for cucurbit production.
- No resistant cultivars of pumpkins have been reported.
- Scout for disease and apply protectant fungicides when the disease first occurs. The disease is readily controlled by fungicide applications. Thorough coverage of foliage, vines, and fruit is necessary for good control.

## Chemical recommendations:

**azoxystrobin (Quadris):** 11.0 to 15.4 fl oz/A (0 dh, REI 4 h). Apply at the first sign of disease and repeat with a fungicide other than a strobilurin in 7-14 days. Do not rotate with Flint or Cabrio.

**chlorothalonil (Bravo):** 1.8 to 2.7 lb/A (0 dh, REI 12 h). Apply when conditions are favorable for disease development. Repeat no sooner than a 7 day interval. Do not apply more than 19.1 lb/A per growing season.

**maneb/ mancozeb (Maneb, Penncozeb, Manzate Dithane):** Rates vary depending on formulation. See label. (5 dh, REI 24 h).

**pyraclostobin (Cabrio EG 20 %):** 12 to 16 oz/A (0 dh, REI 12 h). Apply at the first sign of disease and repeat with a fungicide other than a strobilurin in 7-14 days. Do not rotate with Flint or Quadris.

**If you are already spraying for powdery mildew,** note that the strobilurins included in this list may not control powdery mildew because of resistance. However, Bravo and other chlorothalonil products are among the protectants which will give control of powdery mildew.

*--Prepared by M. Bess Dicklow, UMass Extension, 107 Fernald Hall, University of Massachusetts, Amherst, MA 01003-9320. Tel. 413-577-1827 Fax 413-545-2115. mbdicklo@umext.umass.edu; adapted by R Hazzard.*

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