



VEGETABLE IPM MESSAGE

AUGUST 29, 2002

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CROP CONDITIONS

As we write this, a very welcome rainstorm covers the state and the region. This is the kind of long, steady rain that is needed. It's too late to save some crops, but will help renew others and will give fall cover crops and fall brassicas, lettuce, late tomatoes, late corn etc. a great boost. I have been impressed with the success that many growers have had in doling out their scarce water resources where they are most needed and will give the most value. This does not mean there aren't a lot of fields that a suffering loss of yield and quality from lack of water. However, it does mean that there are a lot of high quality vegetables in the markets now. Demand for sweet corn is high although there is also a bit of an oversupply at the wholesale level. Many retailers have kept their corn prices high this year and customers keep buying. Tomatoes, peppers and eggplant are coming in strong, with good supply and quality, although blossom end rot and sunscald are a problem in some fields. Melons are excellent this year. Winter squash and pumpkin harvest is beginning. This weekend, farmstands start decking out for fall, with pumpkins, winter squash, corn stalks, mums, and the works, as the public switches gears from summer to fall mode. This means demand for corn is likely to go down, but it still draws customers into the stand. Some growers will soon be harvesting their last sweet corn blocks, but others have enough late plantings to go on through September and into October. They will have to keep spraying –**corn earworm** flights remain VERY HIGH and **European corn borer** infestation of tassels and ears tends to rise in September.

Get **cover crops** in soon on any fields that are finished for the year. Conditions for germination will be good after the rain. Getting rye in early will give them a head start – a boon for when the flocks of geese arrive in late September. Much of eastern Mass is “home” subject to over wintering flocks of geese that love to feed in cover crops. Dave Dumaresq (Dracut) notes that the geese are less interested in rye after it gets several inches tall than when its first germinating. So, he tries to get it going as early as possible.

A note of appreciation to all those farmers and consultants who send in weekly information on a weekly basis.

TWILIGHT MEETING: WEDNESDAY, SEPTEMBER 4, FORBIDDEN FRUIT FARM DARTMOUTH, MA

Join us in southeastern Massachusetts for the final meeting in the Summer Twilight Series which will take place on Wednesday, Sept. 4th, from 5 to 7:30 p.m., at Forbidden Fruit Farm. The location is 307 Rock O' Dundee Rd. in Dartmouth, MA.

Start-up farmer Barbara Purdy will describe her new and expanding operation. The farm is growing raspberries, currants, gooseberries, a few hardy kiwi, elderberries and also this year some vegetables and cut flowers. They produce jam and jellies with frozen fruits collected wild and harvested. Most of the crops are sold at farmer's markets.

If you missed the UMass Research Farm tour in July, this meeting will give you another chance to view **specialty crops** trials. We will discuss Forbidden Fruit's trial of different

ethnic crops. These are being grown as part of a collaborative project with the New England Vegetable and Berry Growers Association, Federation of Massachusetts Farmers' Markets, Southeastern Massachusetts Agricultural Promotion, and UMass Extension. These crops are being evaluated for expanding markets in the Southeast.

Contact Frank Mangan, (978) 422-6374 for further information. One contact hour of pesticide applicator recertification credit will be given.

Directions: From Boston: Rout 24 South to 140 Brocton/ New Bedford. Last New Bedford exit is Rte 6. Turn right (West) into Rte 6 to lights. Take a left at lights onto Slocum Rd. Follow Slocum until it ends. At Dairy Chief take a left and follow this road through the four way stop until it ends at Rock O Dundee Rd. Left onto Rock O Dundee six telephone poles on left then a pair of gravel driveways, ours is the second one.

NEON NEW ENGLAND FIELD DAY, SEPTEMBER 9, 2002

A New England Field Day will take place on Monday, September 9, 2002 in Brattleboro & Westminster, Vermont. Come visit three thriving organic family farm businesses owned and operated by the Harlow Brothers, all within a three-mile radius in Westminster, VT.

The Northeast Organic Network (NEON) and Tom Harlow of Kestrel Farm are hosting a farm tour highlighting vegetable crops research, pest control techniques, and discussion of emerging production and marketing issues. Kestrel Farm is one of 11 exemplary organic farms in the Northeast being profiled by NEON. Kestrel Farm is a 50-acre organic vegetable farm with wholesale and retail markets.

From 10 to 11 AM a complementary tour of Northeast Cooperatives, a wholesale organic distribution center is scheduled. Limited space so sign-up is required! (Meet at 10:00 AM sharp at 90 Technology Drive in Brattleboro, VT.)

A Farms Tour which starts at the Harlow Farm stand in Westminster, Vermont is from 1 to 4 PM and will continue into Kestrel. Lunch will take place at noon - food may be purchased at the farm stand or bring your own.

NEON is a region-wide collaboration of non-profit organizations, research agencies & land grant universities developing better organic farming systems for the Northeast. For more information on NEON and events check the NEON website at www.neon.cornell.edu. For more information on this Organic Field Day or to sign up for the NE Cooperatives tour please call Chris Cousins at The New England Small Farm Institute at: 413-323-4531.

Directions: To the Farm Stand: Take Exit 5 off Interstate 91 to Route 5, turn left (North) and continue ½ mile to the farm stand on the left.

The Co-Op: Is approximately 3 miles from Exit 1 off of I-91. Take Exit (1) off Interstate 91 then take a right onto Route 5 (North) on Canal St. through downtown Brattleboro. Turn slight left on Main St. Route 5 (North) and continue on Main St. (Route 5), which becomes VT Route 9. Bear right onto Putney Road (continuing on Route 5 / VT Route 9 N). Turn left onto Technology Drive. Meet at the Co-op's warehouse above the West River.

--Brian Caldwell, Farm Education Coordinator, Northeast Organic Farming Association of New York

NOW IS THE TIME TO GET YOUR WEEDS UNDER CONTROL!

Everyone has been too busy lugging pipe and harvesting crops to think about weeds. So there are plenty of places around the farm where weeds have taken advantage of this fact, and are now going to seed. This is a critical time to get those weeds tilled, disked, pulled, cut – to get them out by any means possible! The more unusual or new the weed species is the more important is to get it under control. A small patch of a new problem weeds (such as **velevetleaf**, **jimsonweed**, **nutsedge**) will soon become an epidemic all over the farm. Velvetleaf that has gone to seed should be hauled out of the field. **Nutsedge** is now making nutlets and as they mature they will separate from the mother plant and become independent. This means that if you treat nutsedge with Roundup later in the fall, you will not kill those nutlets. Tillage now will prevent the formation of mature tubers (nutlets), which will cause problems in subsequent years. Those tubers have just about the longest life expectance of any weed seeds, i.e. 15 years.

--R Bonanno, R. Hazzard

SPECIALTY CROPS SERIES:

CHINESE CABBAGE (*Brassica rapa* var *pekinensis*)

Other names: Siew Choy, Won Bok; Pai-Tsai (Mandarin), Da Bai Cai, Huan Ya Bai (Cantonese), Cai Bac Thao, Cai Dai (Vietnamese).

There are two main types of Chinese Cabbage: A cylindrical type, known as Michihili (see opposite), which is about three times as tall as it is wide. The second is a hearted type, also known as Che-Foo or Nappa type, which develops a compact, often drum-shaped head slightly taller than it is wide.



Napa type of Chinese Cabbage. Photo by F. Mangan.

Culture: Production practices for Chinese Cabbage are very similar to traditional cabbage – use the same fertility and pest management strategies. Plants can be direct seeded or transplanted and require slightly more space than regular cabbage. There is no specific harvest date, but the leaves should be compact. Chinese Cabbage is more sensitive to early bolting than many other Asian Brassica. Bolting is more likely when crops are subject to both cold weather and long days.

Seed Sources: See Tomatillo article.

Frank Mangan & Tim Andematten, UMass Ext.



Michihili type of Chinese Cabbage heading up. This type is three times as high as it is wide. Photo by M. Verson.

TOMATILLO (*PHYSALIS IXOCARPA*)

The tomatillo is a solanaceous plant originating from mesoamerica and widely cultivated in Mexico and Guatemala, and recently in the southwestern U.S. It is in the same plant family as Cape gooseberries and ground cherries.

The tomatillo produces an edible fruit enclosed in a thick husk. The fruit is used in sauces with chili peppers, mainly to lessen the heat, and in many main dishes.

Culture: The tomatillo has the same cultural requirements as a tomato. It requires a long growing season, in moist, fertile soil. Here in the Northeast, transplanting is essential to avoid frost damage before fruits ripen. Transplant 2-3 feet apart in rows 3-7 feet apart. Harvest fruits when the fruit just begins to break through the husk.

Marketing: Restaurants, farmer's markets, wholesale brokers, and farmstands are all potential markets for tomatillos. A recent Boston Globe article quotes Bob and Jim Ward, who grow tomatillos at Ward's Berry Farm in Sharon.

The Wards sell a few hundred pounds a year to several restaurants, a wholesaler, as well as a few retail customers. Ward points out that finding tomatillos locally can be daunting unless people visit their local farm stands or farmers' markets. Kimball Fruit Farm of Pepperell sells tomatillos at farmers' markets in the Boston area as well as at its farm stand and reports that demand is strong. Marie Hill of Kimball says they often self-seed the following year.



Seed Sources: Evergreen Y.H. Enterprises, P.O. Box 17538, Anaheim, CA 92817, www.evergreenseeds.com; Johnny's Selected Seeds, 184 Foss Hill Road, Albion, Maine 04910, www.johnnyseeds.com, Siegers Seed Co., 13031 Reflections Drive, Holland, MI 49424, www.siegers.com.

--S DeGra y & R Hazard, *Sources: T. Andenmatten, F. Mangan, UMass Extension, and A. Arnett (Globe Staff, 8/28/02 Pg E1 Sec. Food, Boston Globe)*

TOMATO

When to **stop** spraying tomatoes? As a planting approaches the end of its harvest cycle, further investment in fungicides is not cost-effective. Anticipate the time you expect to stop picking and if early blight or canker are the main concern, stop 2-3 weeks earlier. However, if diseases that directly affect the fruit are a concern (such as anthracnose or botrytis), continue spraying until the appropriate waiting period (PHI) before the final harvest.

New York State IPM advisor (J Mishanec) and private consultant (D. Riggs) are reporting that **bacterial canker** is more of a problem in many tomato fields than **early blight** this

year. It can be very frustrating to be 'doing everything right' and still see this disease reach epidemic proportions and get worse every year.

Bacterial canker can be confused with early blight and with senescence due to drought. Typical symptoms of bacterial canker on foliage are "scorching" of leaf margins - brown, crisp edges of the leaves, with a thin, yellow chlorotic band inside the burned tissue. This yellow band is a key identifying trait. This "secondary infection" is what we see most often. It often begins in the lower leaves and moves upward, just like early blight. However, the leaf lesions are not the dark metallic color of early blight and they do not have the concentric rings like early blight. With canker, fruit may develop "bird's eye" spots, small raised scars with a tiny brown center surrounded by a white halo. Symptoms of systemic infections (those which have entered the vascular system of the plant) include stunting, wilting (especially one half of a compound leaf), development of open stem cankers and fruit lesions. Drought will cause overall wilting, curling and browning of the leaves, and stunting of the plant.

Canker will be carried over in non-rotated fields for at least one year. The *Clavibacter* bacteria can survive for at least one winter in crop residue on the surface or underground, and will infect successive crops in non-rotated fields (this includes 'rotated fields' that are adjacent to last year's tomato fields). If you do have an infected field, incorporate the residue as soon and as completely as possible to encourage decomposition. Plan to move to another field next season!

Bacterial speck may also be a problem: Symptoms of speck are tiny black spots on leaves, which soon develop a yellow halo. Small black specks can also be seen on fruit. Leaves with a lot of spots usually turn yellow and fall off. This disease is seed born and when wet weather comes along, the disease can really get going. Splashing water from heavy rains will spread the disease easily. When the leaves are wet, bacterial speck is easily spread by tractors or people as well. Applications of copper on a weekly schedule help to reduce the spread of the disease, but they do not stop it completely. If

possible, applications should be made with a boom sprayer, as an airblast sprayer can spread the bacteria to new locations in the field.

Growers often wait until fields dry off in midmorning before beginning harvest, to avoid spreading disease. This is a good move no matter what diseases you might have in tomato.

CRUCIFERS

Flea beetles are still attacking new brassica seedlings and older plants – except in rotated fields. On one organic CSA farm this week, we observed a late-planted field, isolated from earlier brassica fields, where flea beetles were virtually absent. On the same farm, brassicas planted in the same field where early greens were grown had several flea beetles per plant. It is helpful to have isolated, separated fields – and to use this to advantage. Where early season brassicas are harvested (or bolted) be sure to till deeply, not only to speed decomposition but to disturb flea beetle larvae feeding on the roots. Adults we see now emerged in late summer.

Watch for cabbage root maggot fly eggs on sensitive crops like fall turnips, rutabagas, and Chinese cabbage. Moist, cooler soils after the rain, combined with the flight period that typically occurs in late August, could allow survival of eggs and some damage to roots or tubers. See May issues for scouting guidelines!

BAYER PHASES OUT GUTHION ON 30 CROPS

On August 2, 2002 Bayer Crop Science voluntarily agreed to phase-out the labeled uses of the insecticide Guthion (Azinphosmethyl) on 30 crops. The cancellation of the product on the fruits will be effective Dec. 31, 2005, and is part of the EPA's implementation of the Food Quality Protection Act. In New England, the greatest impact may be on fruit and nursery stock growers, but vegetable growers may be affected as well. The crops for which use will be stopped or phased out, growers must now turn to new chemistries that target pests more specifically, according to Dr. Wayne Carlson

of Bayer Crop Science. "For the crops for which there is not an alternative at this time, we'll work with the grower groups and EPA over the next several years to determine future use in these crops," said Carlson.

Details of the EPA agreement include:

Time-limited registration: (cancelled 12/31/05 unless submitted data indicate registration should be continued) almonds, apples, blueberries, brussel sprouts, cherries, nursery stock, parsley, pears, pistachios and walnuts.

Phased-Out: (cancelled as of 8/31/05 and cannot be used after 12/31/05) cotton, cranberries, nectarines, peaches, potatoes, southern pine seed orchards and caneberries.

Cancelled: alfalfa, beans, broccoli, cabbage, cauliflower, citrus, celery, clover, cucumbers, eggplant, filberts, grapes, melons, onions, pecans, peppers, plums, quince, spinach, strawberries and tomatoes. *No more sales of product labeled for these use can be made after September 1, 2002* (existing stocks can be used).

-Fruit Growers News and Vegetable Growers News, 8/02

CUCURBITS

Harvest of hard squash is beginning, possibly a bit a head of usual as the early fields matured in the hot and dry conditions. Pumpkins are ripening, but yield and size are low as a result of hot and dry conditions. The rain may help with growth of some late-setting fruit.

Powdery Mildew came in late and is now widespread, but at this point in the season there is a question of whether it is worthwhile to apply further fungicides. If most fruit is full grown, and some is mature; if the foliage is green and health, or is already senescing due to heat and drought; if the crop is not destined for long term storage; if it is a rotated field - these are all factors in choosing to stop fungicides applications at this point.

SWEET CORN: CORN EARWORM IS HOT

Corn earworm numbers are still at very high levels! And we may be seeing more, not fewer, because today's storm moved up from the south and may bring more moths with it.

Wherever captures are higher than 90 moths per week – including **Southeastern Mass** and the **Connecticut River Valley** - growers should continue three- four day spray schedule. (Three days if hot weather continues; four if it stays cool and daytime highs are below 80 degrees). If you sprayed just before the rain, shorten the interval to 3 days. This is the kind of pressure that leaves every ear infested when timing or coverage is off. Corn earworm has made its way into the part of the regions that are normally are lightly hit – the **Berkshires and Southern Vermont**. With captures in the 20-60 moths/week range, these growers should be on a 4-5 day schedule. **Northeastern and Central Mass** have similar capture levels, with the exception of the 'northern tier' - Dracut, Still River, which have lower levels this week. **Watch traps after the storm** moves through and adjust sprays accordingly – nightly counts can be used as well as weekly counts.

The graph on the next page shows the progress of corn earworm captures in three representative locations in the state.

European corn borer moth flight is beginning to decline (Z-strain is still high, but E-strain is low). See graphs, on next page. However, borers are still hatching out. Scout any pretassel corn (look in the florets of tassels for little larvae) and clean up those infestations before silk to avoid having borers tunneling into the side of the ear. During silking ECB lays eggs near the ear and larvae may scoot down the silk channel, just like earworms do. Be sure to begin silk sprays early, during the first 2-3 days of silk emergence.

Organic corn growers, make sure new blocks get oiled in a timely fashion. Include foliar BT sprays at green tassel and early silk to help reduce the European corn borer damage in the side of the ear. In three years of trials with growers around the region, we found that this additional foliar spray made a difference especially in areas where ECB pressure is high.

Sap beetles are reported to be infesting ears. Adult beetles lay eggs on silks, and larvae invade the top kernels. These tiny grubs are white, much like maggots. Though they don't do a lot of feeding damage, they definitely do not appeal to customers. These beetles are attracted to rotting or injured vegetable or fruit tissue. Any piles of discarded vegetables or fruits on the farm could help keep populations high. Likewise, leaving culled vegetables or fruit in the field, or dropped tree fruit below the trees, will provide great sites for feeding and reproduction of sap beetles. Sweet corn is not the primary host, so we should be able to reduce the overall population with managing other food sources.

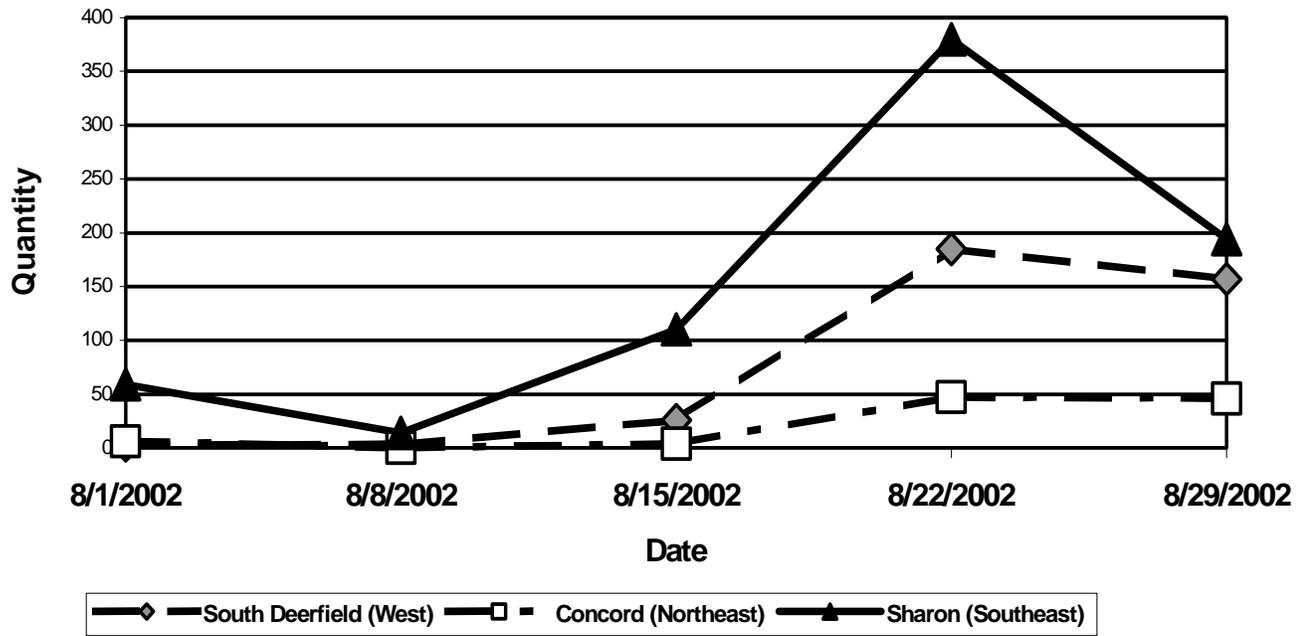
As far as sprays, what works? It seems that many insecticides that are labeled for this pest (including Sevin, Malathion, Asana, Warrior, and Lannate) do not always give great control, but as of this writing I don't have the answer as to which one does work best. Any success stories in controlling this beetle would be welcome.

CORN EARWORM THRESHOLDS

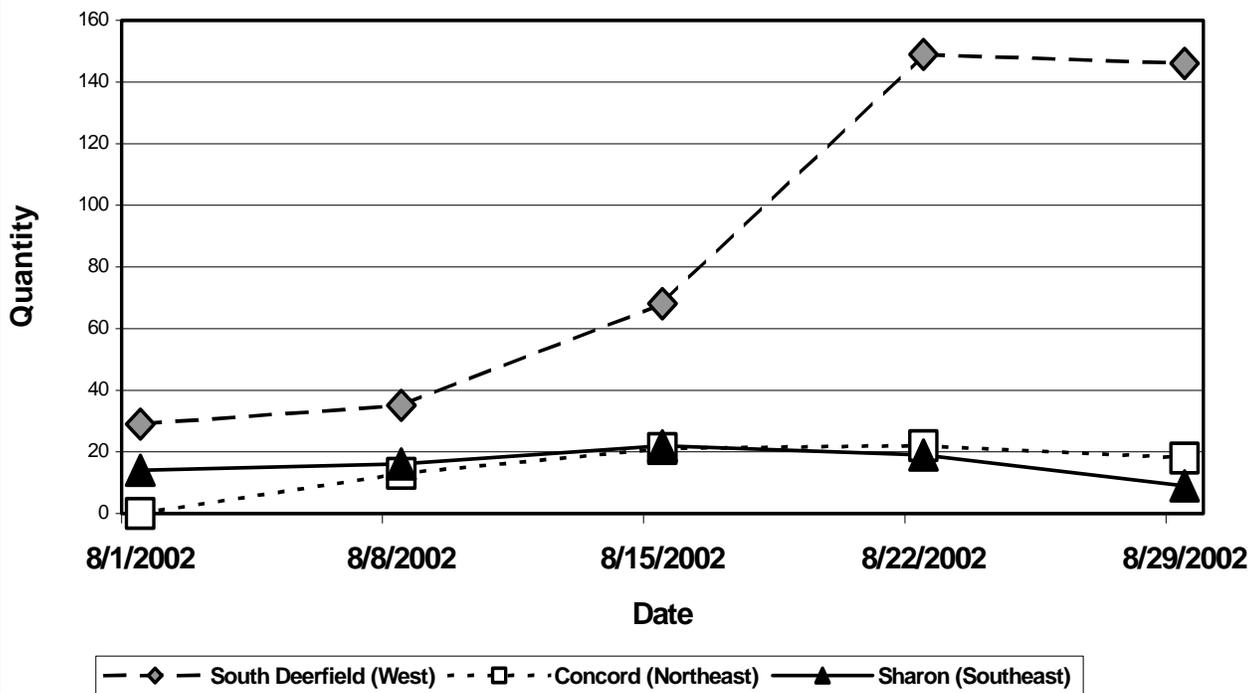
Note: Spray intervals can be lengthened by one day if daily maximum temperatures were below 80° F for the previous 2-3 days.

Moths/Night	Moths/Week	Spray Interval
0 - 0.2	0 - 1.4	No spray
0.2 - 0.5	1.4 - 3.5	6 days
0.5 - 1	3.5 - 7	5 days
1.0 - 13.0	7 - 91	4 days
Over 13	Over 91	3 days

Total CEW Trap Captures From 3 Locations Throughout MA



Total ECB Trap Captures From 3 Locations Throughout MA



Sweet Corn Trap Captures & Scouting Data August 23 - 29, 2002							
Town	Date	ECB Z1	ECB E2	TOTAL ECB	CEW	FAW	% PT
		Iowa	New York				
N. Bennington VT	August 29	97	3	100	23	--	--
Conn. River Valley North to South							
Walpole, NH	August 27	6	12	18	5	0	0
Plainfield, NH	August 28	27	14	41	51	11	0
Westminster, VT	August 27	10	12	22	64	5	0
South Deerfield	August 28	42	104	146	268/46***	11	-
Whately	August 27	17	67	84	(peppers)	--	
Sunderland	August 28	52	10	62	-	-	-
Hatfield	August 29	12	9	21	112	-	-
Hadley #1	August 28	38	25	63	114	-	-
Hadley #2	August 28	1	8	9	25	10	-
Feeding Hills **	August 28	10	1	11	36	0	-
East/Central MA, North to South							
North Andover	August 24 *	0	15	15	25	0	-
Ipswich	August 29	6	1	7	54	12	-
Dracut	August 28	10	3	13	1	-	-
Lancaster	August 29	15	10	25	25	0	-
Still River	August 28	2	3	5	6	-	-
Concord	August 26	18	0	18	46	0	-
Leicester	August 27	12	1	13	29	0	-
Northbridge	August 27	20	17	37	25	10	-
Belchertown	August 28	14	5	19	106	6	-
Dighton	August 29	3	11	14	263	-	-
Rehoboth	August 29	44	32	76	44/231***	43	-
Sharon	August 29	3	6	9	64/324***	42	-
Abbreviations:							
ECB Z1: European corn borer Z (Iowa, I) strain; ECB E: European corn borer, E (New York, 2) strain.							
CEW: Corn earworm; FAW: fall armyworm.							
% PT: Percent of pre-tassel corn (unsprayed) with ECB or FAW caterpillars present, based on scouting 50 to 100 plants.							
*NOTE captures are from last week. **A farm in Southwick reports CEW at 114 moths/week.							
***Two traps at the same farm.							

Vegetable IPM Newsletter, Ruth Hazzard, Editor and Stephanie DeGray, Assistant Editor. The Vegetable IPM Newsletter 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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