UMASS EXTENSION

VEGETABLE IPM MESSAGE

AUGUST 1, 2002 VOLUME 13, NUMBER 14

CROP CONDITIONS

All main season vegetables are being harvested. Peppers and eggplants are coming in, potato harvest has begun, and sweet corn is in full swing. The Southeast is suffering from serious drought, with virtually no rain since early June. Other areas of the state have generally had adequate water, although irrigation is needed to keep crops in top shape during the hot spells.

UPCOMING TWILIGHT MEETINGS

Wednesday August 7, Twilight Meeting at **New England Small Farms Institute** located at Belchertown, MA (see last week's issue for directions). Contact: Robert L. Wick, (413) 545-1045.

Wednesday, August 28 from 5 to 7:30 p.m. at Keown Orchards located at 9 McClellan Road, in Sutton, MA there will be a Twilight Meeting. Features of the tour will include Jane Oliver and Artie Keown's 78-year-old Farm Stand, Farmers' Market and Wholesale operation. Their farm focuses on vegetables and tree fruit, fresh cut flowers, pick-your-own, school tours and special events. Some production techniques include, high density trellised apple orchards, plastic mulch and drip irrigation, and greenhouse season extension. There will be a tour of the farm looking at the greenhouses, orchards and field grown vegetables. Contact: Jonathan Bates, (413) 529-9100 for more information.

Directions: Take Mass Pike to Exit 10A, Route 146 South. Go to the Central Turnpike Exit and go left towards Northbridge. Take your second left at Dodge Hill Road and follow signs. From the South take Route I46 North to Central Turnpike and take a right, then follow the signs.

IT'S NOT TOO LATE TO TRY NEW BRASSICA SPECIES THIS FALL!

We are looking for growers in Massachusetts or Connecticut who would be interesting in trying some new brassica species on their farm. We will provide the seed and growing information. The grower will be asked to grow the crop, test it in any of their usual marketing channels, and report back to us on the results. The grower will also receive $150 for participating in the project. Since many brassicas will grow late into the fall, it is not too late to order seed for leafy greens or fast-growing crops such as Bok Choi or Choy Sum.

The variety of brassica that you try must be a variety that you have not grown in recent years. It can be any kind of brassica – it does not have to be an "Asian brassica". Examples that growers are trying: Broad Leaf Mustard, Dwarf Choy Sum, Mei Qing Choi, Komatsuna, Vitamin Green, Mizuna, Greenwich Cabbage, and Daikon. You may contact Frank Mangan (978-422-6374) and he will tell you more about the project and help you choose a variety that will be appropriate for your farm. We have funding for about 10 growers.

-F. Mangan and R. Hazzard

CRUCIFERS

Watch for **Caterpillars** on leaf and heading crops. Scout for early feeding damage and for larvae on the undersides of leaves. **Imported Cabbageworm** and **Diamondback Moth**

are active, and **Cabbage Looper** may build up at this time of year. **Flea Beetle** activity is slowing down and pressure is generally less intense in August than earlier in the season. However, we have observed feeding in new seedlings in mustard and other non-waxy crops. Waxy crops such as Gai Lon (Chinese flowering broccoli), cabbage, broccoli and cauliflower are less likely to suffer heavy feeding damage, especially at this time of year. (However, they are *more* likely to have caterpillar damage). Flea beetle feeding at the cotyledon stage can cause significant stunting later in crop growth.

Use irrigation in new plantings to provide the cooler temperatures and moisture needed for good germination.

Downy Mildew of crucifers was observed this week in Chinese broccoli. Look for fuzzy growth on the underside of leaves and yellowing on the upper side. It can infect seedlings as well as older plants.

POTATO AND EGGPLANT

Colorado Potato Beetles are increasing, as new summer adults emerge. These beetles can cause significant feeding damage, especially in eggplant where they clip flower buds as well as feeding on leaves. Use a material that will kill adults (Provado, Spintor, Asana, Ambush) and follow with another class of material (including those listed above, or a Bt such as Raven Novodor) for new larvae if needed. In **potato**, don't try to control every beetle in the field, especially late in the season. Potatoes can tolerate 15% defoliation without reducing yield, and as harvest approaches, this tolerance increases.

Keep an eye out for **Potato Leafhopper**. In conventional potatoes this is an easy pest to manage, but it is important to avoid a buildup (Threshold: 1 adult or nymph per 10 leaves). This pest is one of the most difficult to control in organic fields. Currently the only allowed pyrethrin product is Pyganic Crop Protectant. Neem products are also labeled but effectiveness is uncertain. Leafhopper damage has brought some organic potato fields to a halt and reduced yield significantly. Where uncontrolled, leafhoppers are exploding with high numbers of nymphs.

Late Blight has **not** been reported in the region in the past two weeks. However, conditions have been highly favorable for late blight and **Early Blight** and fungicides are recommended at 7-day intervals.

TOMATO: TOM-CAST UPDATE

From 5 pm Friday, July 26 to 5 pm Sunday, July 28, the Connecticut Valley experienced one continuous leaf wetness period, with optimal temperatures for **Blight** development. It took 5 days to reach 15 DSV's! If you have not applied fungicide to tomatoes for over a week, it would be advisable to repeat applications. Stake and weave culture, which raises plants off the ground but minimizes suckering and plant stress is also of value in reducing blight development.

DSV VALUES: July 16 - 31, 2002
SOUTH DEERFIELD RESEARCH FARM

Date	DSV's/Day		Date	DSV's/Day
July 16	2		July 25	1
July 17	1		July 26	1
July 18	0		July 27	3
July 19	3		July 28	4
July 20	2		July 29	4
July 21	2		July 30	3
July 22	1		July 31	3
July 23	0		**Days to reach 15 DSV's**	**5**
July 24	2		**Cumulative DSV's since May 24**	**92 DSV's**

-- S DeGray, R Hazzard

CUCURBITS

Powdery Mildew is present in some crops, but others are still free of this disease. Scout fields to look for the white, fuzzy growth on lower or upper leaf surfaces.

Isolating late season vine crops from early squash and zucchini appears to help reduce the early arrival of this disease. One farm with a pumpkin field close to early zucchini has had powdery mildew in pumpkin for several weeks, while other isolated pumpkin fields are still clear of it.

Begin fungicide applications as soon as powdery mildew is observed, and continue at approximately 10-day intervals. Rotate among classes of materials (rotate Quadris or Flint, both strobilurins, with Nova) and use a broad-spectrum fungicide (eg chlorothalonil) along with Nova. Resistance to Quadris has been observed in other regions and when it happens, it tends to be a high level of resistance. Rotate to keep these materials useful for as long as possible. Apple growers should avoid using Quadris, which causes fruit injury; however Flint is anther strobilurin fungicide, which does not pose the same risk to apples.

Striped Cucumber Beetle is still active, though numbers are lower. These are most likely new summer adults. Watch fruit for signs of feeding damage. There are no established thresholds for damage at the fruiting stage, but if feeding on foliage or flowers is severe, beetles should be controlled. Avoid spraying when bees are active. **Spotted Cucumber Beetle** is also present in vine crops.

Squash Bug eggs and nymphs are being found in many fields. Typically squash bugs do not reach pest levels. However, they can cause leaf and fruit injury if numbers are high. The threshold recommended by Cornell University is one egg mass per plant. We are seeing higher numbers than that in some fields, especially in low-till or no-till situations where cover crop residues are high. Squash bugs are very secretive and congregate in protected locations such as under boards (which can be used for trapping in small plantings) or in residues. Sometimes they are not spotted until populations are in high numbers. Higher numbers of eggs and nymphs are found in squash (especially summer squash zucchini), pumpkin and hubbard squash. Squash bugs do not prefer and do not survive well (hence, do not become a pest) on cucumber, watermelon and muskmelon. If summer squash gets away from you and get too big to harvest, squash bugs will move in and feed on the unharvested fruit. If populations go unchecked, they will begin feeding on good fruit, especially pumpkins.

Squash bug nymph

Squash bugs nymphs can be found hatching out on foliage. Squash bug eggs are laid in clusters (usually on undersides of leaves) and change color from yellow to bronze shortly before hatching. Adults are flat, gray-brown. Nymphs are light gray with black legs and go through 5 molts as they grow to adults. There is one generation per year. Adults over winter in residues in or near the field.

Feeding, which is done by piercing the plant tissues with stylets, interrupts xylem transport and causes wilting in leaves, stems, and vines that are beyond the feeding site. The injury may appear as light-colored areas that later turn brown and die. These symptoms are similar to bacterial wilt symptoms. If you have a question about the cause of wilt, contact the Disease Diagnostic Lab (413-545-1945).

The key to keeping squash bugs under control is to start trying to control them as soon as the first nymphs hatch. Adult squash bugs and older nymphs are very hard to control because they develop a hard exoskeleton as they mature. The contact insecticides available are most effective against young nymphs. In addition, since squash bugs are so secretive they can be difficult to reach with insecticides. Repeated sprays may be

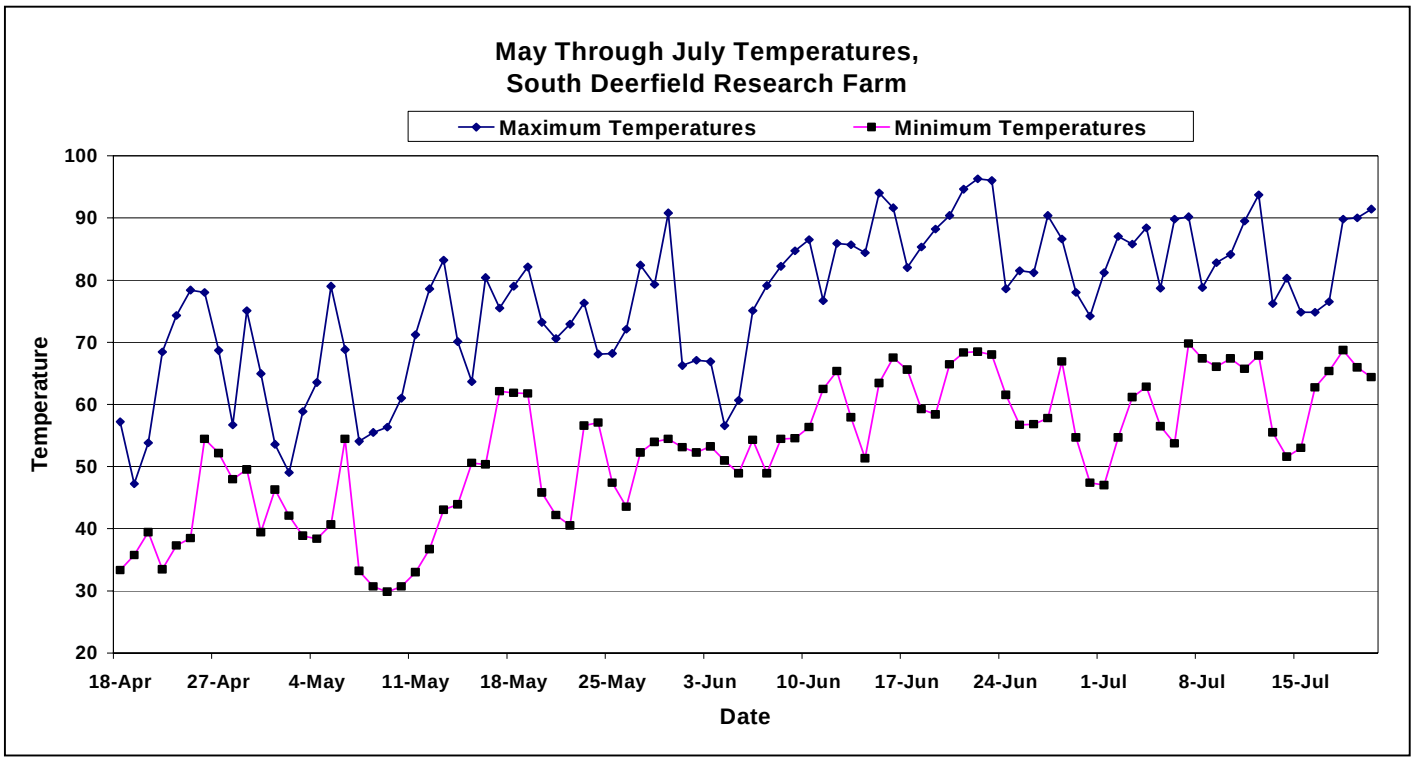
needed to keep populations down because of different generations and eggs all being in the field at the same time. Sevin, Rotenone, Ambush, Asana, and Thiodan are labeled for use on this pest in vine crops.

PEPPER: START EUROPEAN CORN BORER SPRAYS SOON.

Many pepper growers in the state do not experience problems with **European Corn Borer** infestations, but in larger fields and areas where ECB pressure is high, damage from ECB infestations can be devastating. **ECB** flight is on the rise and captures have exceeded 7 per week in many locations (see table on page 6). **Insecticide applications should begin one week after captures reach the threshold of 7 moths per week.** That usually means the first week of August in much of Massachusetts – and this year seems to be no exception. This delay between the start of flight and the first spray is safe because of the time required for mating, egg-laying and egg hatch before any fruit will be infested. Insecticides for ECB should be applied at regular intervals during the second-generation flight period, especially in the next 2-3 weeks during peak flight. The recommended interval depends on the material used. Orthene (7dh) can be applied at 10-14 day intervals (but note label restrictions on the number of applications per season), SpinTor (1 dh) or Pounce (3 dh), at weekly intervals, and Bt products (Mattch, Dipel DF, 0 dh) twice weekly. Confirm has a 7 dh restriction but can be used at a 10-14 day schedule and has a low toxicity to natural enemies. Pounce has been shown to cause **Aphid** outbreaks. Note that the application limit for Spintor for the season is 29 oz of product (at 3-6 ounces per application).

A ROLLER COASTER SUMMER

A look at the maximum and minimum temperatures from South Deerfield Research Farm shows some of the extremes that farmers have faced this summer. The high and lows of late April had an effect on early corn, while the cold wet spell of early June affected germination of many crops. July had its share of ups and down, with extremes in both directions. Overall, growing conditions have been good and vegetables crops are growing well. The exception is in non-irrigated fields, especially in the southeast where drought conditions are severe and virtually no rain has fallen since early June.



SWEET CORN: CORN EARWORM ALERT

Corn Earworm Moths are making their way into the state. Heaviest numbers were found along the coast, in northeastern and southeastern parts of the state. Apply insecticides to silking corn on a regular schedule, starting immediately. In coastal areas with captures of 10 to 70 moths, use a 4-day schedule. Inland with captures of 4 to 7 moths can use a 5-day schedule. New moths arrive ready to lay eggs and eggs hatch in 3 days under the kind of heat that we are experiencing this week, **so don't delay applications**. It is especially important to provide coverage on silk shortly after a block releases pollen and starts silking. See *2002-2003 New England Vegetable Management Guide* for recommended products.

The rate of captures of new moths is rising this week, so watch for increasing numbers in traps. If you have traps on your farm, check traps every 3-4 days and convert counts to nightly captures. Traps placed in freshly silking corn will capture higher numbers than those in dry silk, because moths are attracted by the odor of fresh silk.

Now is the time to focus on good coverage of the ear zone. Boom sprayers with drop nozzles provide the best coverage; boom sprayers without drops or airblast sprayers can give adequate control but do not target the ear zone as well. Airblast sprayers are the most likely to cause drift off-target. If using an airblast sprayer, do not try to force the spray through the corn from the edge, which serves as a filter and blocks spray beyond the 3rd or forth row. Aim spray over the top of the tassels and apply when the air is still so that it will settle into each row. Many growers with airblast sprayers reduce their block size to 12-14 rows in late season corn to ensure good coverage of the inner rows. See the fact sheet *Managing Sweet Corn Pests in Massachusett*s for a drop nozzle design as well as photos and thresholds for key pests (UMass Extension Bookstore, 413-545-2717, or see www.umassvegetable.org).

Organic Sweet Corn Growers: Now is the time to apply oil & Bt to silks (English now has a new verb: 'to zealate': vt, to apply oil with a zea-later oil applicator to sweet corn). **Timing is key:** The best time to apply is after pollination and before eggs have time to hatch. This is 5 to 6 days after silk begins to show. Look for the first signs of wilting at the ends of the silk, or open an ear to see if the ends of the silks have separated from the future kernels. Once each kernel is fertilized, the silk detaches from that kernel. There may still be a few silks attached at the tip of the ear, since these are the last to be fertilized. We recommend corn oil, but soybean oil may also be used. Use 0.5 ml per silk in a one-time application to each ear. The addition of a small amount of Bt to the oil improves control. For more details consult the fact sheet *Biointensive Insect Management in Sweet Corn* on our website at http://www.umassvegetable.org/soil_crop_pest_mgt/sweet_corn/index.html, or contact Pam Westgate at 413-545-3696 for a copy of the fact sheet. The Zea-later oil applicator is available from Johnny's Selected Seeds at 207-437-4395.

European Corn Borer is also on the rise. We can expect hatch of new eggs next week. When these are laid in silking corn, the larvae may enter the ear directly through the tip. Sprays used for corn earworm will provide adequate control of ECB in the silk. Scout corn coming into pretassel, which may begin to show new infestations within the next week.

Sweet Corn Trap Captures & Scouting Data July 26 – August 1, 2002							
Town	**Date**	**ECB Z1**	**ECB E2**	**TOTAL ECB**	**CEW**	**FAW**	**% PT**
		Iowa	**New York**				
Berkshire Region							
Sheffield, MA	August 1	1	4	5	4	-	-
Conn. River Valley North to South							
Plainfield, NH	August 1	5	1	6	0	0	19
Westminster, VT	August 1	0	16	16	1	0	3
Hatfield	August 1	3	36	39	0	-	-
South Deerfield	July 31	0	16	16	-	-	-
Deerfield	August 1	--	--	--	8		
Sunderland	July 31	3	26	29	2	-	-
Hadley #1	July 31	13	-	13	2	-	-
Hadley #2	July 31	75	36	111	4	17	0
Feeding Hills	July 31	7	1	8	4	0	0
East/Central MA, North to South							
North Andover	July 26	0	0	0	0	0	12
Ipswich	August 1	3	1	4	25	2	0
Dracut	August 1	1	11	12	3	-	-
Lancaster	August 1	1	7	8	3	0	0
Still River	July 31	3	4	7	6	-	-
Concord	July 29	0	0	0	6	0	0
Leicester	July 30	2	0	2	2	1	-
Northbridge	July 30	4	1	5	2	0	0
Belchertown	July 31	2	3	5	3	2	-
Dighton	August 1	1	19	20	22	-	-
Rehoboth	July 31	1	8	9	10	-	-
Sharon	July 31	1	13	14	59	-	-

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 caterpillars present, based on scouting 50-100 plants.

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

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

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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