UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

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IN THIS ISSUE:

CROP CONDITIONS

Dry conditions across the region have surpassed the ability of growers to irrigate their way out of the problem. Signs of heat and drought stress are increasing. Everyone is hoping that the predicted rainstorm does come. Ahead of the storm front moving north, a wave of corn earworm moved into the region early this week – see Sweet Corn report and also watch for fall armyworm. Midsummer fruiting crops - field tomatoes, melons, eggplants and peppers – are hitting their stride. Keep an eye out for spider mites in eggplant and tomato. Harvest of beans, beets, broccoli, cabbage, cucumbers, greens, lettuce, potatoes, radishes, snap beans, sweet corn, summer squash, summer squash and assorted other vegetables continues. Broccoli quality has suffered from the heat – but then, getting good broccoli at this time of year is a feat in any season. Sweet corn quality has been excellent except where light fields are excessively dry. Bird damage in sweet corn is a problem.

Tomato quality is excellent for the most part. Tomato hornworm is showing up a lot, especially in high tunnels – watch for bare stems! No new late blight outbreaks have been confirmed in Massachusetts and the SV accumulation for the week is very low (0-3); however, early blight and Septoria leaf spot pressure has increased. New late blight outbreaks were found in central NY and northern VT. In cucurbits, downy mildew is in NY and NJ (within 200 miles), but western New England is at 'low risk', while eastern New England is a 'no risk' according to cucurbit downy mildew forecasts. Thus fungicides can continue to target powdery mildew and black rot which are currently the major concerns. Potato leafhopper remains at high levels and beans need more sprays than usual to prevent injury.

UMASS VEGETABLE, FIELD AND ENERGY CROPS FIELD DAY NEXT WEDNESDAY!

2010 Vegetable, Field, & Energy Crops Field Day

New Crops, New Systems

Wednesday, August 11, 2010

12:30 p.m. – 8:00 p.m.

UMass Crops Research and Education Farm

89 – 91 River Road North, South Deerfield, MA.

Hosted by UMass Center for Agriculture, UMass Extension Vegetable and Crops, Dairy, Livestock Programs, and the College of Natural Sciences. Come and discover innovative ways to diversify your farm and farming practices. Learn about 30+ research projects being explored. This event is free and open to the public. Come for as many tours as your schedule allows. Five themed tours will run concurrently throughout the day, each featuring several research presentations. All tours are offered twice.

1. Cropping Systems and Livestock
2. New Crops and Cropping Systems
3. Zone Tillage & Soil Amendments for Vegetables and Grain

4. Energy and Rotation Crops
5. Vegetable Medley

Pre-registration is encouraged, but not required. To pre-register please email or phone. Email: umassvegetable@umext.umass.edu, Phone: 413-545-3696. Please indicate how many people are coming from your farm or organization.

TRACEABILITY

Food safety involves a variety of issues including worker hygiene, water quality, wildlife/livestock, manure and compost, general farm sanitation, and traceback. We are addressing each of these issues over the summer to help provide some insight on what potential food safety requirements might look like. Please direct any questions to Rich Bonanno at rbonanno@ umext.umass.edu. The following article addresses traceability.

How produce is traced from the field to its final destination continues to be a concern in any food safety plan. The Food and Drug Administration considers this a priority as they move forward with their proposed rules to be released later this year. Whether USDA, Primus Labs, SQF, etc. are auditing a grower, traceability will continue to be more and more important.

Traceback is the ability to track food items back to the source. This process starts in the field, continues through the packinghouse and storage to the wholesaler for a grower. The wholesaler should be able to trace the items back to the grower and forward to the retail buyer. Therefore, each person along the produce chain should be able to trace his or her items one-step forward and one-step back. This improves the likelihood that during a recall the product can be traced to its origin in a shorter time.

Country of Origin

The Country of Origin Act requires all cartons to be labeled with the name and address of the company (farm or wholesaler if repacked). Wood cartons and baskets are included! If product is packed in used wood, any old name and address must be covered up and the farm packing the products name must be placed on the container along with any other information listed in the traceability plan.

Traceability from the field

Growers have been asking whether they needed to trace product from the field to a packinghouse or storage. If bulk product is being moved, a load ticket or field harvest record that identifies the field and moves with the truck or wagon as long as they come from the same field is sufficient. What is bulk product? Potatoes and onions on trucks, squash, cucumbers, tomatoes, eggplant, etc. in baskets are examples of bulk products. Bulk bins (peaches, apples, etc.) can be labeled individually.

For field packed produce each carton, basket, or master must be marked with the company name, address, pack date and any other information listed in the farmer's traceability program i.e. field identification, crew, etc. This information can be coded as long as a record is maintained in either paper or electronic form.

Packinghouse traceability

Once the produce is delivered to the packinghouse, the information on the load ticket or harvest record should be maintained as the product is packed. Each carton or master container must have the company name, address and tracking information including the pack date. Other information that may be useful for tracing include harvest date, field number and grower (if more than one grower). This information can be coded as long as a record is maintained in either paper or electronic form. The grower or wholesaler must be able to trace the individual carton to the field and forward to the next step whether it is the wholesaler for a grower or retail customer for the wholesaler.

Mock Recall

Mock recalls are an important part of a traceability plan. A mock recall is a practice to see if a shipment can be found and returned to the origin (grower or wholesaler) or removed from the marketing chain. You do not need to take possession of the product, just determine if it is possible. At least one mock recall must be done before an audit (within six months). The person carrying out the mock recall must document the person contacted, the amount of product remaining at that

location and the amount of product already shipped by the wholesaler. Have the contacted company fax the same information back on their company letterhead for audit records.

- Article by Wes Kline, introduction by A. Rich Bonanno

PREVENTING BIRD DAMAGE

Bird damage in sweet corn is always a problem; though it is worse in a dry year, it can be damaging in any 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 flocking birds can cause serious crop losses in some fields. Unfortunately 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 that are attracted to ears by the presence of caterpillars will cause damage to non-infested ears in the block as well. 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. Try to keep the birds foraging in the old block while delaying their move to the one that's ready for harvest. Some growers allow birds to scavenge in the old block before disking it in. 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. Another is to plant succession blocks at opposite sides of the field, not right next door.

Sweet corn topping. A technique that has been studied and tested in NYS and CT is to 'top' the corn. Topping 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. Growers who use this method report the advantages to be:

1) two to three days early harvesting compared to un-topped
2) Improved picking ease
3) Reduced bird damage
4) Reduced lodging due to wind.

Other benefits may also include better spray coverage. It is important to use equipment that is designed for this purpose to ensure safety; one source for a topper unit is Haigie. A report on trials conducted in NYS during 2004 is available at (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 to medium sized 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.

Chemical Deterrents. 'Rejex-it Migrate' is liquid bird repellent made from a blend of food grade ingredients extracted from common sources such as concord grapes, neroli oil, acacia, gardenia blossoms, etc. It is non-phytotoxic and meets the EPA's new "reduced risk" criteria and is registered in MA as of 2010. It is labeled for use in sweet corn. Migrate is a contact repellent. It must be eaten before the birds get the repellent effect and learn to avoid treated areas. A small amount of sampling will occur after the initial treatment.

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 disadvantage 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 4l5 (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/, 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, 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

Shooting birds. A federal permit is not required to shoot or otherwise control blackbirds, cowbirds, grackles, crows or magpies when they are found committing or are about to commit damage to or "depredation upon" agricultural crops. In Massachusetts, state permits are not needed for controlling starlings. State regulations allow hunting of crows any time of year except during the nesting season. For more details contact your MA Division of Fish and Wildlife District Office (Western district (413) 684-1646; CT Valley (413) 323-7632; Central district (508) 835-3607; Northeast (978) 772-2145; Southeast (508) 759-3406). From now through the rest of the corn harvest season, no permit would be required to hunt crows. While hunting can reduce numbers over the long term, it may not be effective against flocks of invading birds. It is not illegal to display dead birds in the field, but it is not clear that this is an effective deterrent. For regulations on geese, consult the US Fish and Wildlife service at 413-253-8200.

- R. Hazzard, with information from Laura Henze, US Fish and Wildlife; Chuck Bornt and Ted Blomgren, Cornell.

CERCOSPORA LEAF SPOT OF SWISS CHARD, BEETS AND SPINACH

This disease caused by *Cercospora beticola* occurs wherever table beets, Swiss Chard, sugar beet, and spinach are grown and is one of the most important diseases affecting the *Chenopodium* group. It can result in significant losses, particularly in late summer when conditions are favorable (high temperatures, high humidity, long leaf wetness periods at night). Leafy greens become unmarketable, and beet roots fail to grow to full size when disease is severe.

Identification. Symptoms occur as numerous, initially small circular leaf spots (see photo). Spots have a pale brown to off-white center with a red margin. Lesions expand in size, coalesce, turn gray as the fungus sporulates, and can result in extensive loss of foliage. Leaves at the center of the plant are often less severely affected. The pathogen produces sclerotia

Cercospora Leaf Spot

or stromata which can be seen with a hand lens as small, black dots in the center of lesions. Lesions may also occur on petioles, flower bracts, seed pods, and seeds. Leaf symptoms are similar to those caused by Beet Phoma (*Phoma betae*), except that the phoma will have more obvious tiny fruiting bodies in the lesions and can also affect the roots.

Source and survival. *C. beticola* survives between crop cycles in residues from infected crops (as sclerotia), in weed hosts, and on seed. It can survive in the soil for up to two years. High levels of disease can result from just a few infected plants since each lesion produces numerous conidia. Several cycles of infection and conidium production may occur with favorable environmental conditions. Spores can penetrate the leaf directly through open stomates. The pathogen is favored by high relative humidity and temperatures between 75-85˚ F and is spread by rain splash, wind, irrigation water, insects, workers, and equipment. Leaf wetness during the night, even with dry conditions during the day, encourages disease. Successive plantings made close together can allow disease to move from one planting into the next.

Cultural management. Bury infected crop residues and destroy volunteer plants and weed hosts. Start with certified, disease-free seed or treat seed with hot water or fungicides. Rotate to non-host crops (not in the *Chenopodium* family) for 2-3 years. If disease is present, do a once-over cut rather than cutting chard or spinach for regrowth. Avoid planting succession crops close together. Avoid overhead irrigation if it will result in prolonged leaf wetness periods (e.g., through the night); irrigate mid-day when leaves will dry fully or use drip irrigation.

Chemical controls. For optimum results use protectant fungicides as a preventive treatment, prior to infection and symptom development. Pathogen populations resistant to sterol demethylation-inhibiting (DMI's, FRAC Group 3) fungicides have been reported, so although these products are labeled, fungicides with other modes of action should be used. These include azoxystrobin (Quadris) (Group 11); basic copper sulfate (Basic Copper 50W HB and other copper products) (Group M1); pyraclostrobin (Cabrio) (Group 11); trifloxystrobin (Flint) (Group 11). Do not alternate Group 11 strobilurin fungicides with each other (Cabrio, Quadris and Flint). Products that simply kill spores on contact will not prevent the continuing production of spores nor protect leaves from new infections. For more details check the Beets and Chard section of the New England Vegetable Management Guide, www.nevegetable.org.

-by Bess Dicklow, Rob Wick and Ruth Hazzard, UMass Plant Soil and Insect Science Dept.

ONIONS: HARVEST AND CURING TIPS FOR BEST QUALITY

As onions mature, their dry matter content and pungency increase, with a resulting increase in storage potential. Onions are ready for harvest when at least half the leaves are dead. Tops are beginning to fall in many fields. Pull the bulbs by hand or use equipment such as a potato digger or undercutter to cut the roots and lift the bulbs. If you wait until all the leaves are dead and dry, it's likely that the outer skins will be loose rather than firm, which may not hurt the keeping quality but the onions will not look as nice. However, pulling too green will make it difficult to cure them well. Harvest when the weather is dry; harvesting after a rainfall or when the humidity is high increases susceptibility to post-harvest disease.

For optimum storage quality, onions must be cured soon after harvest. Optimum conditions are 68-86°F and 70% relative humidity for at least 12 to 24 h. Curing decreases the incidence of neck rot, reduces water loss during storage, prevents microbial infection, and is desirable for development of good scale color. Curing can be done in the field, preferably when the weather is warm and dry. If it rains, let them dry fully before handling – don't handle the bulbs when they are wet. A greenhouse or hoophouse also provides good conditions for curing. Temperatures in the 80's will enhance the bronze color in the skins. Sunshine is good as long as it is not too hot. Extremely hot sun with temperatures in the 90's can produce sunscald. Onions curing on a sandy soil will get hot quicker than those lying on a heavier soil. In a greenhouse, temperatures should be held below 85 degrees F, which will probably require leaving everything wide open. Using a black shade curtain over the house can help. Curing is complete when the neck is completely dry and tight. If the neck remains open it

allows entry of pathogens such as Botrytis neck rot.

The next step is topping. Mechanical onion toppers are essential for larger plantings, and for the needs of a small diversified farm they are probably best obtained second-hand. Check your favorite used equipment dealers! Onions can also be topped by hand using clippers. Handle gently to avoid bruising. Defective onions (i.e. sprouted, insect damaged, sunscalded, green, bruised) should be discarded. Grade for size according to your markets.

To ensure maximum storage, onions must be promptly stored after curing. Get them out of the sun; exposure to light after curing will induce greening of the outer scales. The optimum temperature for long-term storage of onions is 32°F with 65-70% relative humidity, but it is important to bring them down to this temperature slowly. In fact, holding onions in a barn or garage so that they cool along with the average outdoor temperature in late summer and fall works quite well. Avoid cooling bulbs to well below the average daily temperature, because they will draw moisture from the warmer air, which can lead to disease. If you are selling them within a couple of months, keeping them in an un-insulated barn is fine. To hold longer, an insulated storage room will be needed.

Harvest Tips for Best Quality

1) Be sure onions are well dried and necks tight (i.e. the tissue does not slide when you roll your neck between your fingers) before topping. Bacterial diseases and Botrytis Neck rot can move through green tissue into the bulbs. These diseases do not move in dry tissue.

2) Leave 2-3 inches of neck on the bulb. This increases the distance from the cut surface to the bulb for these pathogens to travel.

3) Minimize mechanical injury during harvest & topping. Reduce drops to 6" and pad sharp surfaces. Bruises provide direct entry points for diseases to get started.

4) Grade out damaged onions before putting them into storage. Damaged bulbs give off moisture, which is favorable for development of diseases in storage.

- John Howell, Andrew Cavanagh, & Ruth Hazzard. Resources: CSU Extension and the University of Saskatchewan.

SWEET CORN REPORT

Fields are very dry across the state and some plants are stunted and wilted. Irrigation is continuing where possible but rain is desperately needed everywhere. Picking is in full swing and sales remain steady while retail prices are holding around $4.00 a dozen. Corn earworm has arrived in force and fall armyworm trap counts sky rocketed to 190 in one week in southern New Hampshire. The dry conditions have enabled growers to stay on top of spraying keeping harvests clean and customers happy.

Corn Earworm Threshold		
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

European corn borer flight is below spray thresholds in most locations this week besides a few spots in the Connecticut valley and northeastern MA. In silking corn, when the sum of both European corn borer traps exceeds 12 moths per week, a weekly spray is recommended. Scouting of tasseling fields will tell you what type of feeding pressure you have and is a more accurate picture of what is happening. Although trap captures are low, larva could still be feeding in the tassels, stalks and ears of corn plants. Keep scouting on a regular basis, spray when 15% or more of plants in the field have live caterpillars. Remember to only count live caterpillars and fresh feeding damage. Sprays for corn earworm typically take care of ECB problems at this time of the season.

Corn earworm is showing up across the state with all locations reporting trap captures above the 1.4 moths per week threshold. See the chart below for CEW spray threshold specifics. Spray intervals can be lengthened one day if daily maximum temperatures are below 85 degrees over a two or three day period, although this will most likely not be the case over the next two weeks. Keep rotating your traps to fields with fresh silk and check them twice a week to stay on top of populations that can arrive over night.

Fall armyworm trap captures were very variable this week ranging from 0 to 190. A universal moth trap and Scentry

PSU type lure should be used to monitor FAW flight. Place traps at plant height in whorl stage corn and change lures every other week. If you are seeing ragged looking feeding in your fields you may have a FAW infestation. Caterpillars are smooth and dark green or brown with lengthwise stripes and dark spots. Full-grown larvae can reach up to 1.5 inches. The head capsule is dark with a distinctive light colored marking in the form of an upside down Y. This is in contrast to the CEW which always has a plain tan colored head. FAW needs to be controlled in whorl stage corn when 30% of the plants are infested and when 15% of the plants are infested in pre-tassel and tassel corn.

Location	ZI	EII	Total ECB	CEW	FAW
CT Valley					
South Deerfield	0	2	2	_	_
Sunderland	0	2	2	14	2
Hadley	11	10	21	25	8
Southwick	7	22	29	8	5
Hatfield	1	1	2	45	0
Feeding Hills	0	0	0	13	5
Central & Eastern MA					
Dracut	0	12	12	94	4
Concord	0	6	6	16	5
Northbridge	0	1	1	44	12
Spencer	1	0	1	11	0
Still River	0	3	3	34	0
Lancaster	0	1	1	21	0
Littleton	0	6	6	6	0
Tyngsboro	0	6	6	3	0
Rehoboth	1	2	3	45	0
Framingham	2	1	3	11	0
Berkshire County					
Sheffield	1	4	5	6	_
NH					
Litchfield, NH	2	1	3	39	190
Hollis, NH	9	0	9	54	6
Mason, NH	7	0	7	10	0

UPCOMING MEETINGS

"Grower to Grower" Program on Greenhouse Biological Control

August 11, 2010

Grower Direct Farms, Somers, CT

9:30 - 3:30

Program Details and Registration

http://www.umass.edu/umext/floriculture/upcoming_events/index.html

Speakers will cover topics on quality control when receiving shipments and tips on efficient methods of application including mechanical applications of biocontrol agents. Attendees will also have an opportunity to see biological control being used on the current mum crop and poinsettia cuttings. You can pay at the door, however please register by phone or email by Friday, August 6th to help us with estimates for lunch. 5.75 Pesticide credits (private category) will be available.

Co-sponsored by University of Connecticut and University of Massachusetts Extension

Contact Tina Smith (tsmith@umext.umass.edu) for more information.

2010 Northeast Organic Farming Association Summer Conference

August 13 -15

UMass Amherst

Over 200 workshops on organic farming, gardening, land care, sustainability and homesteading.

Teen and children's program, dozens of outdoor exhibits and vendors.

Keynote speakers: Sally Fallon Morrell, founder of Weston A. Price Foundation and author of bestselling book Nourishing Traditions: The Cookbook that Challenges Politically Correct Nutrition and the Diet Dictocrats. Second keynote speaker

is Dr. Fernando Funes, of the Cuban Association of Agronomists and Foresters. Dr. Funes will speak on the Cuban transition to a sustainable farming system during the Peak Oil crisis and Soviet withdrawal in the late 1980. Entertainment includes dancing, country fair, and alive auction.

Dorm rooms, camping and wholesome organic meals. To register visit www.nofasummerconference.org. For more information contact the NOFA Summer Conference office at (978) 355-2853 or info@nofasummerconference.org.

26th Annual Massachusetts Tomato Contest

Monday, August 23, 2010

Please join us for the 26th annual Massachusetts Tomato Contest. This year's tomato contest will be held at the Boston City Hall Plaza Farmers' Market. The event is sponsored by the New England Vegetable and Berry Growers Association in cooperation with the Massachusetts Department of Agricultural Resources. This friendly contest is designed to increase consumer awareness of local agriculture.

If you cannot attend the contest on Monday, tomato entries can be dropped off Saturday August 21st or Sunday, August 22nd at a number of locations across the state. Please contact one of the following representatives to confirm drop-off entry(s). Tomatoes that are dropped off will be brought to Boston for judging. See below for a list for drop-off sites.

Deep Zone Tillage Twilight Meeting & Grower Discussion

August 24, 2010, 5pm-7:30 pm

Cemetery Rd., Hadley, MA

Meet with Alan Zuchowski and Wally Czajkowski, who have both acquired zone building equipment and have been experimenting with Deep Zone Tillage (DZT) in sweet corn, vine crops and other crops. Hear the ups and downs of their experience, see the equipment, and visit some experimental fields. Both are enthusiastic about the system. Anu Rangarajan, Cornell State Specialist for Fresh Market Vegetables, who has years of research and on-farm experience in reduced till systems, will answer questions about cover crops, crop establishment, fertility, and weed control in both organic and conventional zone till systems. UMass extension personnel will be on hand to talk about their research into how this system affects soil and soil-borne diseases, and how you can try DZT on your farm next year without having to invest in expensive equipment. Plans for DZT next season start this fall with your choice of cover crops!

We will meet at the field on Cemetery Rd, in Hadley, MA 01035. Look for signs where West St. turns north off Rte 9, then turn left on Cemetery Rd and watch for signs and equipment. Park on the side of the road. For more information contact Andy Cavanagh at 413-577-3976.

Pesticide applicator contact hours have been requested.

Northeast Greenhouse Conference and Expo 2010

November 3 - 4, 2010

DCU Center, Worcester, MA

New England Floriculture, Inc., invites you to attend The Northeast Greenhouse Conference & Expo in Worcester, Massachusetts and join other growers and retailers for the largest nationally recognized floriculture industry show in New England.

For registration and details, please see: http://www.negreenhouse.org/.

Vegetable Notes. Ruth Hazzard, editor and Amanda Brown and Andrew Cavanagh, assistant editors. 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.