



UMASS
EXTENSION



Vegetable Notes

For Vegetable Farmers in Massachusetts

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CROP CONDITIONS

Soils are growing steadily drier and dustier under this long, remarkably stable period of hot, brilliantly sunny days. Irrigation systems were busy this past week and so were crews that manage them. Water sources are being tapped heavily. Growers report that some fields are holding their moisture well and corn remains vigorous even without irrigation. This is especially true in reduced till or no-till corn. Maturing crops need a lot of water, and young crops need water close to the surface to get a good start. It's critical to keep a steady supply of moisture to crops like tomato or lettuce that are susceptible to physiological problems related to high temperatures or uneven watering. Seeding midsummer cover crops may have to wait on arrival of rainfall. Weeds are taking off faster than the crops, taking advantage of the fact that growers have turned their back for a moment to harvest the great crops that are coming in. New crops this week include green beans, cherry tomatoes, and early potatoes – especially the reds.

The good news is that migratory pests like corn earworm and mobile pathogens like downy mildew that arrive on storm fronts are stalled further south. In general, crops are looking healthy and harvested crops are excellent quality. Rain is needed to keep them that way.

LATE BLIGHT UPDATE

Late blight was confirmed in Middlesex County, MA last week, new reports were confirmed in Norfolk County, MA and in Sagadahoc County, ME (central coast) this week. If you suspect late blight in your fields it is important to contact the UMass Disease Diagnostic Lab and send a sample for confirmation. We are fortunate that stable hot, sunny conditions without rain are not favorable for long distance dissemination of spores. Late blight weekly severity values are low (0-4) with a 10 to 14 day spray interval recommended. In general, tomato crops are more free of leaf blight than one would usually expect at this time of year – though early blight and Septoria leaf spot can be found on some lower leaves, they are being held in check by dry conditions. Note however that plant nutrition is important factor in early blight development; as fruit grows and ripens the N demand on the plant increases and early blight may be worse where nitrogen is lacking.

PEST ALERTS

Spotted Wing Drosophila: New confirmed captures occurred in Franklin County, MA and in southern New Hampshire. Given these capture locations, it is likely that SWD is active broadly across the state. Numbers are low so these finds are not cause for panic. With raspberries coming in, and blueberries in full swing, SWD activity could increase. We know that it is capable of increasing very quickly. Set up traps to monitor on your own farm, and observe fruit closely. Pick hard to clear out all ripe fruit may also be a useful strategy. Protect crops in areas where SWD has been found. Report or send samples or photos to Sonia Schloemann, sgs@umext.umass.



No-till sweet corn on a sandy soil shows no sign of drought stress. Other crops can get watered first, this one can wait. Ward's Berry Farm, July 10.

**Growing Degree Days, Late and Early Blight Forecasts
for Week Ending July 12**

DATE:	Blitecast for Late Blight		Tomcast for Early Blight			
	7/12/2012					
Location	GDD Base 50F	7-Day Rainfall (in)	LB Severity Values - season*	LB Severity Values - 7 day	Tomcast Severity Values - season**	Tomcast Severity Values - 7 day
Pittsfield	1098	0.00	89	3	36	4
South Deerfield	1195	0.01	58	3	30	1
Belchertown	1380	0.00	57	4	49	4
Bolton	1261	0.00	68	2	33	0
Stow	1388	0.00	64	1	51	10
Dracut	1237	0.00	66	1	30	5
Tyngsboro	1280	0.27	60	0	23	2
Boston	1272	0.00	49	0	47	3
Sharon	1211	0.00	63	2	47	7
East Bridgewater	1189	0.00	86	3	28	1

edu or 413-545-4347.

Downy mildew of Cucurbits (DM): A stationary front stretching from the Carolinas across the South will remain in place through midweek.

Powdery mildew of cucurbits: Look for this on early zucchini and summer squash. has been observed in several locations around the state. Initiate PM sprays on susceptible crops after the first symptoms are found.

Sap beetle is showing up in corn and day neutral strawberries and wherever ripe or decaying fruit or vegetable matter is found. The picnic beetle has yellow spots, while the dusky sap beetle is all black. The strawberry sap beetle is wider and coppery colored.

Preventing deer damage. Put up electric fences to keep deer out of crops well before they start feeding -- once they

become accustomed to your fields they will be much harder to keep out.

*Values accumulated since May 1. See NEWA for Blitecast values for later emergence or TP date.

**Values accumulated since May 14. For later transplant dates use NEWA forecast for your station & TP date.

Blitecast SV and Spray Interval Table						
Total severity values during last 7 days						
	<3	3	4	5	6	>6
Total rain/irrigation for past 10 days	Spray Interval for late blight control (in number of days)					
>1.2 inches	10-14	10	7	5	5	5
<1.2 inches	10-14	10-14	10	7	5	5

QUALITY BROCCOLI IN SUMMER HEAT

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. Even 'early fall' broccoli, harvested in early September, may be subject to summer heat during critical growth periods.

Growing. Growing quality broccoli through the hottest part of the summer is a tricky proposition, and while there isn't a silver bullet that will ensure a perfect crop, there are ways that you can mitigate your risk and ensure the best possible broccoli crop all summer long.

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 is the period of about 10 days prior to when a tiny crown is 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 are uneven and poorly shaped. Other references suggest that temperatures above 85 degrees can cause heat injury. Heat injury occurs weeks before harvest – so even broccoli that is harvested in the cooler temperatures of late August or early September may suffer from heat injury.

Other factors in addition to heat can cause reduced head quality and increased susceptibility to disease. Uneven or inadequate soil moisture exacerbates heat stress. Trickle irrigation may be helpful for supplying water on a regular, steady basis without increasing the risk of water sitting on the head. When individual buds or areas of the head are killed by heat stress, this allows entry of pathogens. Uneven heads also allow water to remain longer on the surface of the head, which increases the likelihood of disease development.

Inadequate nutrients and improper nutrient balance affect both head and stem quality. 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. Cauliflower, turnip and rutabaga are also very sensitive to boron deficiency. Conventional fertilizers can be purchased with added boron. 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). There are a number of soluble sources of boron, including Solubor and Fertibor, which are OMRI listed. Solubor is 20% B so you’d need 10 lb per acre to achieve 2 lb actual. If you are broadcasting an organic blended fertilizer, ask if your supplier will add boron to the mix. Another way to apply Boron is to mix it in water, spray it on the soil with a boom sprayer, and incorporate it into the soil.

In general, even moisture and fertility are important in producing high quality broccoli heads. Avoid large doses of nitrogen directly after head initiation.

Handling and Storage. Broccoli is one of the more challenging crops for postharvest handling. Harvest in the early morning, so the crop comes in from the field as cool as possible. For best quality and shelf life broccoli needs to be cooled to 32 degrees F rapidly, under conditions of high humidity. Rapid cooling is the key is preventing yellowing of broccoli. Higher temperature will cause the floret to turn chlorotic very quickly so cold (32 F) must be maintained throughout the postharvest period. In addition, broccoli is sensitive to ethylene, so it is important that the florets are not stored in a cooler with other vegetables or fruits that emit ethylene.

The main challenge for many vegetable growers is the lack of a facility to quickly cool down the florets. As is typical of all flower buds, broccoli’s respiration rate is extremely high. The best way to slow this down is to quickly cool the heads down to as close to freezing as possible. Many growers have ONE cooler where they store vegetables and they also use the same cooler to remove field heat from vegetables. This type of setup is inadequate for rapid cooling and the vegetables and fruits often remain warm even after storing in the cooler for 48 hrs. Ideally, broccoli should be pre-cooled in a different facility before being brought into cooler where all of the produce is stored. Not only will this allow the broccoli to quickly reach the target temperature, but it will also not raise the temperature of the storage room.

There are many different ways to pre-cool fruits and vegetables, vacuum cooling being one of the methods. The least expensive methods are force-air cooling and hydro-cooling. The latter cools down the vegetables faster than the former. The mister method works as it is similar to hydrocooling. It will be even more effective if the water is chilled. Vacuum cooling is very effective but is one of the most expensive investments of all of the pre-cooling methods available.

--Andy Cavanagh & R. Hazzard

PREVENTING BIRD DAMAGE TO SWEET CORN

Bird damage in sweet corn is always a problem. Although it is worse in a dry year, it can be damaging in any year. Start now to prevent damage! It is best 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.

The redwing blackbirds nest in hayfields, marshes and ditches and congregate at large nighttime roosts near their nesting sites. Large flocks feed in fields and bottomlands, and the worst damage to sweet corn is reported by growers near rivers and marshes. Insects are the dominant food in the nesting season (May through July), then the diet shifts to grain and weed seeds in late summer. This, along with the expanding acreage of ripening sweet corn in mid July, may explain the 'sudden' appearance of flocks in sweet corn at this time. Grains that are affected by redwing blackbirds include sweet corn, ripening grain corn, sunflower, sorghum, and oats.

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

--*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.

--*Leave old corn for birds to eat.* 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 perches nearby for protection and rest. It also helps if you plant succession blocks at opposite sides of the field, not right next door.

--*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.

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 whose active ingredient is Methyl Anthranilate (MA), extracted from Concord grapes. It is not phytotoxic, is safe to use, and is labeled for use in sweet corn up to the day of harvest. Migrate is a contact repellent that makes the crop unpalatable to birds. After the birds taste it, they learn to avoid treated areas. Begin applications when birds begin feeding or crop begins to ripen, get good coverage of the plant, and use repeat applications or higher rates if populations are high. Apply in the evening rather than the heat of the day. Repellents are likely to be most effective if combined with other tactics.

Auditory Scare Devices: Exploders are gas-fired cannons placed in the field that fire automated, timed discharges. 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. Neighbors may complain.

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).

Distress calls and raptor 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 tools 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. Conway, MA
- Bird Guard Bird Control Products, 800-331-2973, email info@birdgard.com, Erie PA
- Birdbusters, Alexandria, VA phone (703) 299 8855
- Bird-X, Inc, Chicago, Ill, (800) 860-0473
- Gemplers, Belleville, WI (800) 382-8473

Hire a falconer. Even better than recorded raptor calls is the real thing! There are falconer clubs in many areas. Hire a falconer to fly his bird over your field. Nothing will clear out a flock of blackbirds faster than a falcon swooping over the field!

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. The advantages may include 1) 2 to 3 days early harvesting compared to un-topped, 2) improved picking ease 3) reduced bird damage, 4) easier to monitor bird activity in the block 5) spray coverage and 6) reduced lodging due to wind. One significant risk is that cut stems are sharp and pointed and can cause eye injury to pickers; it's a good idea for pickers to wear goggles in topped fields. It is important to use equipment that is designed for this purpose to ensure safety; one source for a topper unit is Haigie. As with other methods, topping should be done early, several days before harvest, so the birds are not already feeding in the block.

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 should 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 Service; Chuck Bornt and Ted Blomgren, Cornell Cooperative Extension; Richard Dolbeer, USDA-APHIS-ADC

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TARNISHED PLANT BUGS

Tarnished plant bug adults and nymphs feed on several different vegetable crops, and in some fields they can cause significant damage. There are several species of tarnished plant bugs in the US, but the most common in central and eastern US is *Lygus lineolaris*. Adults are about 6 mm long (1/4 inch), brown or tan or greenish with darker markings on their wings and back. Nymphs are bright green and progress through 5 molts (instars) from first hatch to the adult stage. The nymphs can be mistaken for aphids, but move much faster when disturbed. Overwintered adults lay eggs in spring, depositing eggs in stems and leaf ribs in host plants. These adults and nymphs attack strawberry flowers in May. A new generation of adults will produce another brood in late summer, and for most of late summer all life stages are present in the field.



Tarnished plant bug adult

Feeding: Adults and nymphs have piercing sucking mouthparts (stylets) which are used to penetrate plant tissues and suck up cellular contents. TPB select succulent, nutritious tissues such as new growth or newly forming fruits (just after blossoming). While feeding, the bugs secrete a toxic substance from their salivary glands, which kills cells surrounding the feeding site. Usually the first signs of damage are small brown spots on young leaves. As the tissue grows, healthy tissue expands while dead tissue does not, which results in holes and distorted, malformed leaves, buds or fruit. Terminal shoots and flowers may be killed.

Damage: Over half of the cultivated crops in the US are listed as hosts. In **strawberry**, the distorted growth of fruits is known as cat-facing. **Raspberry** fruit is deformed and becomes crumbly and unmarketable after TPB feeding. In **apples**, adults feed on fruit buds and cause fruit dimpling and scabbing, or dropping off (abscission) of the buds. For these fruits, TPB is a key pest. Vegetables usually sustain minor

damage, but in some years it can be significant. In **lettuce**, leaf stems and ribs are injured, causing localized discolored scars and scabs. In **celery**, feeding on tender stalks produces large, brown colored wilted spots and blacking of joints, known as “black-joint”. In beans, feeding on flowers causes them to drop, and feeding on seeds in young pods causes pitting and blemishing of pods. In **tomatoes, eggplants and peppers**, feeding may occur on flowers and stems, causing flower drop. Fruits may also be attacked leading to indentations, bumps, or yellowing of the flesh where the fruit is “stung” by the piercing mouthparts of nymphs or adults. These could be confused with stink bug damage or pepper maggot stings, but they do not have the white pithy areas beneath the skin that is typical of stink bug damage. It is not common to see this damage, but if the damage occurs it may help to determine the cause. In pepper and in basil, feeding in emerging leaves causes distortion and browning of leaves.

Weeds and field crops are also host plants: Tarnished plant bugs thrive on a large variety of weeds, flowers, forage crops, and orchard crops. Weed hosts include wild carrots and other umbelliferous crops, redroot pigweed (and other amaranths), lambsquarters, mustards, shepardspurse, rocket, goldenrod, and mullein. Alfalfa is a favored host, and harvesting alfalfa often stimulates major lygus migrations. Other legume hosts include vetch, lupine, and fava beans. Where weedy areas or field crops surround vegetable fields, continuous re-infestation of vegetables is possible – especially when weeds mature, and vegetables have young and succulent tissues.

Management: Vegetation management on the whole farm is very important for these highly mobile pests. Focus on removing sources of infestation outside the crop: mow, disk or rototill weeds along field borders, and keep grassy areas on the farm mowed short. However, disturbing non-crop areas by mowing can encourage movement of TPB into your crop, so avoid critical periods when the crop is vulnerable or mow after insecticides have been applied to the crop. Control weeds in the crop as well – tender growth and young flowers and seeds are attractive to TPB.

There are natural enemies of TPB, including a parasitic wasp (*Peristenus digoneutis*), which was released for control of TPB in alfalfa. The wasp was released in New Jersey and has spread throughout the Northeast. It can cause up to 50% mortality, but currently does not reduce the numbers sufficiently to prevent damage in key crops. Common predators, such as ladybeetles, spined soldier bugs and insidious flower bugs also prey on nymphs.

White sticky traps placed above the canopy are used in strawberry and can be used in vegetables to indicate when adults are present. These traps are used as an indication of when plant bugs begin their activity in the spring and a relative indication of their abundance, not as an indication of when to control this insect. Economic thresholds have been determined for crops where TPB is a key pest, but not in most vegetable crops. It is difficult to sample tarnished plant bugs directly on plants, because they are very mobile and like to hide. In strawberry, nymphs are shaken off the flower clusters onto a flat surface and sprays applied if 4 out of 30 clusters have nymphs.

If damage is unacceptably high, use insecticide applications. Labeled products for TPB on lettuce are listed in the 2012-

2013 New England Vegetable Management Guide and include several synthetic pyrethroids and carbamates. Pyganic may be used by organic growers. Avoid applications during bloom periods to avoid injury to pollinators; use them pre-bloom and post-bloom. Insecticide labels often list “lygus bug” instead of specifically “tarnished plant bug”.

--Ruth Hazzard . Note: Where trade names or commercial products are used, no company or product endorsement is implied or intended. Always read the label before using any pesticide. The label is the legal document for product use. Disregard any information in this newsletter if it is in conflict with the label.

WATCH FOR STEM AND BULB NEMATODE OF GARLIC AND ONION

Infection of garlic with the stem and bulb nematode, *Ditylenchus dipsaci*, is increasingly common in garlic production in Massachusetts, New Hampshire, and New York. Symptoms of the nematode feeding on leaf tissue include blisters, twisting and malformation of leaves, and swellings that can resemble thrips injury. Bulb damage can be mistaken for Fusarium basal plate rot, with bulb decay occurring both at the neck and the basal plate of the bulbs. In advanced stages, lesions caused by the nematode can become colonized by fungi and bacteria, leading to complete decay of bulbs. The common name, ‘garlic bloat’ results from the deformed growth and swelling of the bulbs.

The stem and bulb nematode is a pest of *Allium* species, flower bulb crops (Narcissus, Hyacinth, and tulips), flowering shrubs (Hydrangea), and rhizomatous plants such as Iris and Gladiolus species. The nematode is common in all temperate regions and is easily spread by infected bulbs, rhizomes, or infected plant material. The nematodes can survive long term in infested fields, and though they exhibit marked host preferences, they have a wide host range. When conditions are not ideal, the nematodes will aggregate into a mass (nematode wool), and with slow drying can persist in a dehydrated state for many years. Widespread distribution of *D. dipsaci* has resulted from planting garlic repeatedly into the same fields and trading bulbs widely among growers and the general public.



Symptoms of garlic bloat nematode. If you suspect this problem, contact the Disease Diagnostic Lab for confirmation.

Long rotations out of onion and garlic production, sanitation, eradication, and exclusion are the primary management tools. Start with certified disease-free planting material. Prompt removal and destruction of infested plants can limit nematode damage. Chemical, physical, and cultural methods of control have been used to restrict damage, but most chemical treatments are no longer registered for use. Hot water treatment of bulbs can be effective but must be done accurately with careful monitoring to avoid heat damage to the bulbs.

- M. Bess Dicklow, UMass Extension Plant Pathologist

SWEET CORN REPORT

Enjoy the lull before the storm – that moment of the season when ECB is quiet and CEW has not arrived yet is here! Only the Connecticut Valley, which tends to be warmer so it’s an early warning for the rest of the state, shows the beginnings of the second ECB flight. Cape Cod also has ECB moth captures again. The rest of the locations report zero. Pretassel corn is clean at this point. A few sap beetles are around, including the all-black Dusky Sap Beetle. Often they move in where they find decayed tissue following ECB feeding damage. Corn earworm is zero everywhere except the CT Valley.



Dusky sap beetle (all black) in sweet corn. The other common sap beetle species found in corn, picnic beetle, has yellow spots.

CT Valley corn needs a spray at 6-7 day intervals. Use your free time to water the corn and get it through this dry spell. If storm fronts move up the coast in the next week, watch your CEW trap closely and be ready for action. Sweet corn quality is excellent, but rain or irrigation is needed to keep future harvests from drought stress.

SWEET CORN

WEEKLY TRAP CAPTURES

UPCOMING MEETINGS

UMass Fruit and Vegetable Twilight Meeting, July 31st from 5-7:30pm at Kosinski Farm in Westfield, MA. We will discuss IPM innovations for apples and blueberries. For more information contact Jon Clements clements@umext.umass.edu

UMass Greenhouse Crops and Floriculture Program: Great Ideas Summer Conference

Elm Bank Horticulture Center, 900 Washington Street (Rt.16) Wellesley, MA 02482

Thu, July 26, 2012, Time: 9:00 AM - 3:30 PM, See listing for more details:<http://extension.umass.edu/floriculture/events/great-ideas-summer-conference>.

Location	Z1	EII	Total ECB	CEW	FAW
CT Valley					
Barnstable	1	0	1	1	
South Deerfield	0	0	0	0	
Sunderland	3	1	4	5	1
Hadley	3	5	8	7	0
Feeding Hills	2	0	2	1	0
Central & Eastern MA					
Spencer	0	4	4	0	0
Dracut	0	0	0	0	0
Tyngsborough	0	0	0	0	
Lancaster	0	0	0	0	0
Harvard	0	0	0	1	
Concord	0	2	2	2	
Millis	0	0	0	1	
Northbridge	0	2	2	0	0
East Falmouth	2	13	15	1	
Barnstable					

Vegetable Notes. Ruth Hazzard, Amanda Brown and Andrew Cavanagh, co-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.

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