



UMASS
EXTENSION



Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 20, Number 6

June 11, 2009

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CROP CONDITIONS

Cool-season crops are growing very well, benefitting not only from cool temperatures but also low humidity. Heat-loving crops are getting settled. Parts of the state received some rain earlier this week but eastern and southern areas remain very dry, and all areas would welcome a good rain. That said, it has been a relief not to have too much water this spring. Farmers have been extremely busy getting the long-season crops into the ground while keeping up with weed control, side-dressing, succession plantings, and harvesting early crops. Strawberry harvest is delivering a high quality crop in row-covered fields and among early varieties. Tarnished plant bug, sap beetle and two-spotted spider mite are pests in strawberry that can also show up in vegetable crops. Growers are harvesting lettuce, bunching and salad

greens, bok choy, peas, greenhouse tomatoes, early carrots, turnips, and radishes. Community Supported Agriculture share distributions started last week. The fervor for local produce is filling CSA's, farmers markets and farmstands. Strawberries and garlic scapes are a welcome addition to greens at the early CSA pickups. Warmer areas of the state are seeing active feeding by Colorado potato beetle and cucumber beetle. Be prepared as they can move in fast as soon as we see warmer weather. Also be ready to scout early corn for ECB as tassels start to poke up.

Mark your calendar for an exciting Field Day at the UMass Crops Research Farm on Thursday July 16. There will be something for everyone as we tour a wide range of research projects on energy crops for oilseed and biomass, wheat, vegetables, and zone tillage. See below for more details.

EXPECT AND PREPARE FOR DOWNY MILDEW IN BASIL

Downy mildew of basil is a new, destructive disease that is expected to occur routinely in the USA as it has been doing in Europe since first occurrence. Downy mildew was reported as severe at many farms in the northeast USA in 2008, the first year it was observed in this region. Growers generally did not realize their basil had a disease because the most noticeable symptom on affected plants was yellowing, which was assumed to be the result of a nutritional deficiency. The downy-appearing sporulation of the pathogen only develops on lower leaf surfaces. Complete crop loss occurred for some growers because leaves with any injury are unmarketable. Photographs are posted at:

<http://vegetablemndonline.ppath.cornell.edu/NewsArticles/BasilDowny.html>



Yellowing, necrosis, and sporulation on basil leaves and flower bracts

Basil downy mildew is a new disease in North America as well as Europe. It was first reported in south FL in October 2007. In 2008 downy mildew was confirmed in both field- and greenhouse-grown basil in many states: NC, PA, NJ, NY, MA, NC, KS, and MO. Likely it occurred elsewhere but was not observed. This disease was also reported in Canada in 2008 and in greenhouse-grown

basil in Argentina in February 2008. In 2009 basil downy mildew was found in CA. Reports of basil downy mildew in Europe occurred a few years earlier: greenhouses in Switzerland in 2001, Italy in 2003, and Belgium in 2004 as well as France in 2004, Israel and New Zealand. Basil downy mildew has also been detected recently for the first time in Iran and several African countries: Cameroon in 2007, South Africa in 2005, Benin and Tanzania. Prior to all these recent outbreaks, basil downy mildew had only been reported in Uganda and that was in 1933. It is possible that a more aggressive pathogen strain evolved in Uganda that is responsible for the recent developments.



Close up views of sporulation in sections on the lower surface of leaves.

The basil downy mildew pathogen (*Peronospora belbahrii*) can be spread in contaminated seed, in infected basil leaves, and as wind-dispersed spores. Downy mildew also was observed recently on ornamental plants related to basil, in particular coleus and salvia. These plants all belong to the Lamiaceae family, which includes basil (Ocimum spp.), mints (*Mentha* spp.), sages (*Salvia* spp.) and other aromatics. Recently the coleus and basil downy mildew pathogens were demonstrated to be genetically different; therefore, these ornamental plants are no longer considered potential alternative hosts. However, there are many ornamental basil plants that are also hosts to the pathogen affecting basil grown for use as an herb. Contaminated seed is most likely the way that the basil downy mildew pathogen has been able to move between geographically-separated areas. Basil is also marketed internationally. The pathogen found in FL has been shown to be genetically the same as that in Switzerland (100% homology in their sequences). Spores of the basil downy mildew

pathogen are capable of being dispersed long distances. Infected basil leaves produce an abundance of spores. Thus the pathogen can spread widely once introduced to an area. This could explain the widespread occurrence of basil downy mildew in the eastern USA in 2008.

With basil downy mildew now established in Florida, a monitoring program is being conducted in 2009 to determine whether this pathogen can move northward through the eastern USA as can occur with the cucurbit downy mildew pathogen, and whether a monitoring program can assist growers to be prepared for downy mildew occurrence in their basil crop. Occurrence of downy mildew in basil is being posted in a spreadsheet accessible at:

<http://vegetablemdonline.ppath.cornell.edu/NewsArticles/BasilDowny.html>

At the bottom of this web page, which can be reached by clicking on 'Please report' at the top of the page, is a section about the program. Clicking on the first link in this section, which has the word 'spreadsheet' in it, opens up the web page with the spreadsheet in Google Docs. The success of this activity depends on reports from anyone growing basil; therefore everyone is encouraged to enter observations. Information is needed about the planting and how the diagnosis was made. Reports are also valuable of locations where downy mildew is not found on basil. There is a spot for indicating if a report is of downy mildew being present or absent.

Another activity in 2009 is sentinel plots with basil located throughout the eastern US. This formal monitoring activity is being conducted as an add-on to the ipmPIPE cucurbit downy mildew monitoring program. For this program, sentinel plots with various cucurbit crop types are set-up throughout the eastern USA, from FL and TX to NY and WI, as well as southern Canada, and routinely examined for symptoms of downy mildew. There were 83 sentinel plots in 2008. Basil is being grown at many of the sentinel plots in 2009.

Using seed not infested with the basil downy mildew pathogen and applying fungicides are the management practices for downy mildew. Variety evaluations have not been conducted yet to determine if there are inherent differences among varieties; no genetic resistance has been detected yet. Genovese basil seems very susceptible while Nufar basil appears to be least susceptible, but this is based on observations; they have not been compared yet in replicated experiments to assess whether they are significantly different from other basil varieties. Experiments are being conducted this year. Nufar has pointy leaves with serrated edges. Few fungicides are currently labeled for this new disease. There are two phosphorous acid fungicides, ProPhyt and K-Phite, that have downy mildew under herbs on the current label. These fungicides were effective in fungicide efficacy experiments with applications started before or after initial symptoms were found. Actinovate AG is an OMRI-listed fungicide that is labeled for use on herbs and for suppressing foliar diseases including downy mildew. Amistar is labeled for use on basil but not specifically for downy mildew; it is effective. Other fungicides are expected to be labeled for this use in the future. Applying fungicides frequently and preferably starting before first symp-

toms are considered necessary to control downy mildew effectively. Practices that minimize leaf wetness can contribute to control; these include planting where there is good air movement with rows parallel to the prevailing wind direction, maximizing plant spacing, and using drip irrigation.

To determine when to initiate a fungicide program and also when it is warranted to consider harvesting early to avoid losses to downy mildew, growers should not only routinely check the on-line spreadsheet to determine when downy mildew is occurring on basil nearby, but also regularly inspect their crop for symptoms. The cucurbit downy mildew forecasting web site (<http://cdm.ipmpipe.org>) might be useful for predicting when conditions are favorable for basil downy mildew since both pathogens likely have similar requirements for successful wind dispersal long distances (e.g. overcast skies) and subsequent infection (e.g. wet leaves). Summer is not a time to forget about this disease: unlike most other downy mildew pathogens, e.g. the ones affecting lettuce and cruciferous crops, which stop developing in summer, the basil downy mildew pathogen seems to develop best under moderate to warm temperatures while also tolerating cool temperatures.

Basil crops should be disked under or otherwise destroyed as soon as possible after last harvest or when abandoned because of disease.

Please Note: The specific directions on fungicide labels must be adhered to -- they supersede these recommendations, if there is a conflict. Any reference to commercial products, trade or brand names is for information only; no endorsement is intended.

-Margaret Tuttle McGrath, Department of Plant Pathology and Plant-Microbe Biology, Cornell University

POST EMERGENCE YELLOW NUTSEdge CONTROL

Yellow nutsedge is a perennial sedge (not grass) that emerges in early May from a small tuber or 'nutlet'. The plants will begin to form new tubers in July and August, so it is important to manage it before this occurs. In general, between-row cultivation will not control emerged nutsedge well, but only move the plants down the row with the cultivator and spread it in the field. However, in fallow fields, regular tillage during the season can manage this weed well for future crops. There are a few postemergence herbicide options that are now available. Sandea (halosulfuron) is an herbicide that is now registered on a variety of vegetable crops. It is in the sulfonylurea class of herbicides and is effective at very low rates. It is important that application equipment be well calibrated to avoid over-application. Sandea can be applied preemergence or postemergence in several crops. The crops that Sandea can be used on include asparagus, sweet corn, tomatoes, beans, cucumbers, pumpkins and some melon types. For pumpkins, applications can be made to direct seeded crops after seeding but before 'cracking'. Postemergence applications should not be made until the crop has two to five leaves. A nonionic surfactant, but not a crop-oil, should be added for optimal control. Although Sandea will control or suppress yellow nutsedge and a number of broadleaf weeds, lambsquarters will not be controlled with postemergence applications. Weeds should be in the 1-3 inch stage when treated. Weeds that are larger than this will not be well controlled. Slight stunting and yellowing of the crop has been observed within a few days of postemergence applications. Usually the crop recovers quickly with little effect on yield.

- A. Senesac, Cornell's Long Island Research Lab

CORN REPORT

Early plantings are at least 12-18 inches tall, with some now reaching pre-tassel or tassel stage. The much welcomed rain has helped to deliver side-dressed fertilizer to the root zone in areas that were fortunate enough to get significant rainfall this past week, plants are looking dark green and flourishing. Row cover has been removed from early fields and later succession plantings are going in including bare ground and transplants. In those areas of the state that have not received rain, irrigation may be needed. These growers are keeping their fingers crossed for some of the forecasted rain to hit their fields in the next few days.

European corn borer flight remains in the double digits in most locations in the Connecticut valley this week. Locations east of RT 495 and south of RT 2 may have higher flights such as Rehoboth where a flight of 65 moths was reported.

Flight can vary greatly from location to location and even among fields on one farm. While relying on your neighbor for trap counts is helpful, for a more accurate picture of what the ECB flight is like on your farm, place monitoring traps on field edges where adult populations will emerge and infest your sweet corn plantings. Remember that within days after the flight begins (4-9 days depending on temperature); females start to lay white egg masses on the underside of leaves. Eggs will hatch in about a week (also depending on temperature) and begin feeding on tassels as they work their way down the stalk and eventually into the ear.

It is best to control ECB caterpillars when they are feeding on emerged tassels. This is when the caterpillars are most vulnerable to sprays which can easily target the exposed tassels. Many early plantings will be reaching this stage soon, so now is good time to think ahead and consider a less toxic spray material to conserve the population of beneficial insects that feeds on the aphids in your fields. Conserving beneficials may save you from having to spray for aphids later on in the season. Since scouting season is just around the corner, now is also good time to start thinking about fitting scouting into your weekly routine.

For information on scouting procedures and implementing a sweet corn IPM program on your farm, visit www.umassvegetable.org to download a copy of the UMass Extension publication Using IPM in the Field Sweet Corn Insect Management Field Scouting Guide or email umassvegetable@umext.umass.edu to request a free hard copy.

-Amanda Brown, UMass Extension

| Location | Z1 | EII | Total |
|------------------------|----|-----|-------|
| CT Valley | | | |
| South Deerfield | 0 | 15 | 15 |
| Deerfield | 0 | 7 | 7 |
| Sunderland | 2 | 12 | 14 |
| Hadley (1) | 3 | 15 | 18 |
| Hadley (2) | 1 | 5 | 6 |
| Granby | 4 | 3 | 7 |
| Hatfield | 2 | 14 | 16 |
| Easthampton | 0 | 5 | 5 |
| Southeastern MA | | | |
| Rehobeth | 6 | 59 | 65 |
| Sharon | 1 | 13 | 14 |

CATERPILLARS AND MAGGOT FLIES IN BRASSICA CROPS

Early cabbage and broccoli crops will soon begin to form heads, which means caterpillar injury will have more impact on the marketability of the crop. We have found both diamondback moth caterpillars and imported cabbageworm in the Connecticut Valley. Though cooler temperatures slow them down, these pests are actively feeding and its time to scout your fields. In the early season the numbers tend to be lower than late season, but keeping the first heads clean is key.

Growers have reported maggot eggs and damage on transplants set out in late April and early May. By now, egg laying by the first flight of maggot flies is likely to have subsided. Dry conditions may help reduce survival of eggs and maggots, but cool temperatures favor it.

Imported cabbageworm; cabbage butterfly (*Pieris rapae*). This familiar white butterfly can be seen in daytime fluttering around cole crop fields. Each forewing has a dark border and one or two round black spots. Eggs are laid singly on the underside or top of leaves, about 1/8 inch in length, light green and slightly elongated, standing upright. The caterpillar, called imported cabbageworm, is gray-green, slightly fuzzy, and sluggish. Feeding and resting occur on the underside of leaves, and larvae feed more heavily in the head of cabbage or broccoli as they grow. The chrysalis (pupa) will be green or brown, smooth with three pointed ridges on its back, and attached to a leaf. There are 3-4 generations per year.

Diamondback moth (*Plutella xylostella*) caterpillars are smaller, light green, appear more segmented and more pointed in shape. When disturbed they wiggle vigorously and may drop off the plant on a string of silk. Feeding causes small, round holes and tends to be spread across the foliage and not necessarily concentrated in the head. The adults are tiny (<1/2 inch), light brown, and rest with their wings folded together like a tent. They overwinter in crop residue, but may also enter the region by migrating from southern states.

Field Scouting for caterpillars: It is especially important to check cabbage or broccoli plantings as they begin forming heads. Greens such as collards, kale, and Chinese cabbage should be scouted earlier, since all leaves are marketed. Feeding damage can be found on the underside of leaves or in the center of the plant where heads are forming. Look for tiny

feeding holes, clustered together. Often it is easier to spot the feeding damage first, and then find the caterpillar. Check 25 plants throughout the field and note how many have one or more caterpillar (i.e., are “infested”), then calculate the percent of plants infested. Spray if the following threshold is reached: 35% of plants ‘infested’ for Cabbage & Broccoli, Cauliflower before head formation begins and 15% during head formation for cabbage and broccoli and 10% for cauliflower; 10-15 % for kale, collard and other greens. These thresholds are based on research that showed that spraying whenever this level of infestation is reached results in 98-100% clean heads, the equivalent of weekly sprays but with far fewer insecticide applications. Use selective products to protect beneficials that eat aphids under control, insect eggs and small caterpillars.

FLEA BEETLES IN BRASSICAS



Flea Beetle Damage on Collard

Flea beetles are busy feeding in spring plantings of brassica crops. Beetles have been moving out of field borders where they spent the winter, and finding young seedlings. Crucifer and striped flea beetles feed on Brassica crops as well as weeds that are in the same family, such as yellow rocket or wild mustard. The crucifer flea beetle (*Phyllotreta cruciferae*) is uniformly black and shiny, about 2 mm in length, while the striped flea beetle (*Phyllotreta striolata*) has two yellow stripes on its back.

Flea beetle adults feed on leaves and stems, resulting in numerous small holes, or ‘shot-holes’. Eggs are laid in the soil starting in late May, and beetle larvae feed on roots. The non-waxy type of greens (arugula, bok choy, tatsoi, mustard, Chinese cabbage) are preferred to the waxy cabbage, kale and collard types of Brassicas. In Brassica greens, beetles feed on the whole surface of the leaf, and will continue feeding from the seedling stage until harvest. Waxy crops are most susceptible at the cotyledon and seed-

ling stage and feeding is more limited to leaf margins.

To reduce and delay flea beetle invasion of spring crops, move them as far away from the fields that were used for fall Brassica crops as possible. Beetles overwinter in field borders near last year’s crop. Planting close by ensures a high population in the spring.

One of the best ways to protect Brassica crops from flea beetles is to place a floating row cover over the bed or row. It is critical to seal the edges immediately after seeding, because Brassica seeds germinate quickly and beetles rapidly find the cotyledons. Flea beetles can fit through extremely tiny cracks – not to mention the fist-sized holes and tears that often develop in row cover over time. Edges of the cover must be sealed on all sides using soil, black plastic bags filled with soil, or some other method.

There are a number of synthetic pyrethroids and carbamates which are labeled for flea beetle in Brassicas and which can give effective control of flea beetles. However, repeated use over multiple generations on the same farm is likely to favor selection for resistance. Two neonicotinoids are labeled, one as a foliar (imidacloprid, Poncho 1.6F) and one as a soil drench (thiomethoxam, Platinum) which can provide alternative chemistry.

Thresholds for treatment will vary with brassica species and the quality demanded by your market. The threshold for greens is obviously much lower than for cabbage. One study in Colorado found that 5 or more flea beetles on seedling broccoli reduced subsequent head size. Cornell and Rutgers Universities recommend a threshold of one flea beetle per plant on seedlings up to the 5 leaf stage, or injury and 1 beetle/plant on 50% of the stand.

For organic growers spinosad (Entrust) shows the greatest efficacy in suppressing flea beetles and reducing damage. A supplemental label has been issued in Massachusetts for flea beetle suppression in brassicas; other states may also have this, but in all states the product is labeled for use in brassica crops. Pyrethrin (Pyganic EC 5) showed poor to moderate

efficacy in trials, and has a short residual period.

Perimeter trap cropping can be used to concentrate flea beetles in an attractive border (e.g. Brassica rapa type such as komatsuna or Chinese cabbage) around the waxy Brassica oleracea type (cabbage, kale, broccoli). As with the cucurbit system, beetles need to be killed in the border with insecticides, as soon as they appear. It is critical to have a complete border that is in place at the same time as or before the main crop, and to spray it in a timely manner. This is not likely to work well when flea beetle populations are very high, but has worked to prevent the need for sprays on the main crop under moderate pressure.

WHITE GRUBS

We have had reports of white grub damage to a bean crop, in a field that has been in rotation of cover crops and vegetables. True white grubs are the larvae of June beetles (also called May Beetles) found in the genus Phyllophaga, of which there are over 100 different species. Phyllophaga larvae and other larvae of the family Scarabaeidae are often referred to as “white grubs”. There are four species of scarab beetles that are common in New England turf, fruit and vegetable crops: Japanese beetle, Asiatic Garden Beetle, Oriental beetles and European Chafers.

All white grubs have a typical “C” shape, white body, brown head, and three pairs of legs. The Phyllophaga life cycles vary somewhat because some species complete their growth in one year, while others require as much as four years. Scarab beetles in New England vegetables and turf have a one-year life cycle, while the June beetle life cycle extends over three years. Adult beetles lay eggs in soil in sod and grassy areas. Young larvae feed on roots and decaying vegetation through the summer, then move downward and remain inactive during winter. In spring they return to the active root zone and cause their most serious root feeding damage. When fully grown the larvae pupate, then emerge as adult beetles in midsummer.

Damage from June beetle grubs may be heavier near trees because adults may lay more eggs in sod that is near trees. The greatest damage to crops occurs the year after the appearance of the adults. During the years of heavy June beetle infestation, deep-rooted legumes, such as alfalfa or clovers, should be planted to discourage oviposition. In corn or small grains, every effort should be made to keep the field free of grass and weed growth, as this will reduce the number of eggs laid. Late spring or early autumn plowing destroys many larvae, pupae, and adults in the soil and also exposes the insects to predators, such as birds and skunks. To be effective, fall plowing must occur before the grubs migrate below the plow depth. No-tillage or reduced tillage crop management enhances grub populations.

Natural enemies that control these white grubs include a number of parasitic wasps and flies. Inoculating the soil with bacteria *Bacillus popilliae* Dutky and *B. lentimorbus* Dutky spores aids in reducing populations. Soil-applied insecticides are also effective.

- *-R. Hazzard, sources: Lane Selman, University of Florida; Pat Vittum, Turf Entomologist, UMass, Beth Bishop, Michigan State University, Michael Seagraves, Cornell Cooperative Extension, and Ann Hazelrig, University of Vermont.*
- *-For more on adult scarab beetles see http://www.umassvegetable.org/soil_crop_pest_mgt/insect_mgt/japanese_beetle.html*

FARMERS' MARKETS SEEKING VENDORS

Many farmers' markets are seeking vendors for the 2009 season.

For a list of markets looking for new vendors see: www.mass.gov/agr/markets/farmersmarkets/markets_seeking_vendors_09.pdf.

For Farmers' Market Resources for Farmers, see http://www.mass.gov/agr/markets/farmersmarkets/resources_growers.htm

For information on selling at farmers' markets, contact David Webber, 617-626-1754 or david.webber@state.ma.us.

UPCOMING MEETINGS

Twilight Meeting - Garden Mums

J.P. Bartlett Co. Greenhouse, Rte. 20, Sudbury, MA

Thursday, June 18, 4:00 - 7:00 pm

Join us for pizza and an evening discussing fall mum production featuring diseases on mums, greenhouse sanitation and season long tips for garden mum production.

(2 pesticide credits toward recertification have been requested)

Program details and registration is available at:

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

Pleasant Valley Farm Twilight Meeting

255 Merrimack St. Methuen, MA

Tuesday June 23, 5pm-8pm

****2 Pesticide Applicator Training Credits are available**

Topics: *Phytophthora capsici* management, cucurbit disease management, growing and marketing new crops for expanding ethnic markets in New England, focus on okra, chipilin ('edible alfalfa') and mixixe (spiny cucumber); mums on drip irrigation; drip irrigation systems with double sand filter pulling water out of Merrimac river; lettuce production harvested June to mid October with baby lettuce, full sized heads and bagged Romaine hearts; Beehives to pollinate summer squash and zucchini; biocontrols for European corn borer in peppers: GAP: getting the pack shed ready for Good Agricultural Practices audit; Starting a CSA on the farm

**Light supper will be provided. Funding provided by MDAR, EPA Region I, and USDA sources.

Driving Directions: I-495 from N or S take exit 46 for Pleasant Valley, make a left off the ramp, drive 0.7 mile, look for farm sign on right. Park next to greenhouse.

For advance information, call UMass Extension Vegetable program, 413-545-3696; for last minute info call Rich Bonanno 978-361-5650

Aquaculture Workshop: Water Quality and Re-circulating Aquaculture Systems

Location: 302 Agric. Engineering Bldg., UMass Amherst

Saturday, June 27, 9 am - 3 pm

UMass Extension Western Mass. Center for Sustainable Aquaculture 413-545-1055; chollingsworth@umext.umass.edu; www.umass.edu/aquaculture

Vegetables, Energy Crops, Wheat, and Zone Tillage

Field Day at the UMass Crops Research and Education Farm, South Deerfield.

89-91 River Rd, South Deerfield, MA

Thursday July 16, 2009

2:00 Understanding and Using Combines.

3:00 Heritage Wheats – Varieties from gene banks and farmers of the Old and New Worlds

4:00 Zone tillage demonstration

5:00 Supper – will include specialty breads and ethnic crops

6:00 Choose your tour:

1: Energy Crops: sunflower, crambe, oilseed rape, soybean, grain corn, and switch grass experiments.

2: Vegetables:

- ethnic crops including okra, mixixe (spiny cucumber), chipilin (legume herb) and taioba. Production and marketing, field and high tunnel. Frank Mangan
- ecology of cucumber yield: cucumber beetles above and below ground, pollinators, and mycorrhizal fungi
- organic beetle controls in eggplant and cucurbits
- Brussels Sprouts variety trial for yield and disease resistance
- UMass Student Farming Enterprise
- roller-crimper timing to kill cover crops
- edamame variety trials

Pesticide applicator credits have been requested.

This field day is funded through grants from Northeast SARE, Mass Dept of Food and Agriculture, EPA, and other sources.

For more information contact Ruth Hazzard 413-545-3696, umassvegetable@umext.umass.edu

Beginning Farmer Production & Marketing Training

Friday, July 31 – Saturday, August 1, 2009, Lancaster, MA

Who should attend?

Farmers, gardeners, state and local officials involved or interested in agriculture, nutritionists and health educators, and organizations working with immigrants.

Registration and Event Details: Visit our website at www.flatsmentorfarm.org

Highlights of this event:

- Field hands-on trainings: hoop house construction, vermicomposting;
- Farmer led tours of Asian crops at FMF;
- Cultural lunch on Friday on the field;
- Cultural Sharing dinner with Hmong, Portuguese and African cultures;
- Wholesale and Farmers Market visits in the Boston area

Questions regarding this event contact; Ana Cabral at ana@flatsmentorfarm.org 508-904-7647.

If you would like to become a Vegetable notes sponsor, please contact Jessica Dizek at jdizek@outreach.umass.edu or 413 545 1445

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.

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