UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 17, Number 8 June 22, 2006

CROP CONDITIONS

June *can* be a great month for growing vegetables. This week June finally started showing its bright side, with heat, sun, and of course, long days. Summer solstice brought us breeze, sun and low humidity – great for cultivating, planting, applying more fertilizer, tying tomatoes, and other field jobs. I also had the pleasure of seeing my first sweet corn field with fresh silk on June 21 – a true sign of summer. Crops have greened up, though some still suffer from the leaching rains that left little trace of the fertilizer that was applied at planting. Warmer soils will activate the microbes and make available more nitrogen from organic sources-- whether compost, manure, cover crops, crop residues or your soil organic matter. Rains this week have been scattered and unpredictable, but rarely excessive. Low fields close to rivers had some flooding again last week, and may need to be replanted. Overall, soils are drying out and getting easier to manage. Humid warm nights (over 55 degrees F) mean leaf wetness periods that favor early blight in tomato and other fungal diseases, and put growers on alert for managing disease; see early blight article. Planting of fall cucurbit crops is finishing up, sweet corn successions continue, late summer and fall broccoli and cabbage are being seeded and transplanted. Asparagus season is mostly over, and strawberries are in full swing. Harvest includes lettuce, baby turnips, salad and braising greens, radishes, spring broccoli, zuchini, summer squash, cilantro, green garlic and garlic 'scapes'

--R.Hazzard

TWILIGHT MEETING AT TWIN OAKS FARM

116 Stockbridge Rd. Hadley, MA

Hosts: Edwin and Joe Matuszko, Linda Kingsley

Time: 5 pm to 8 pm

Date: Tuesday, July 18

Twin Oaks is a third-generation vegetable farm producing 50 acres of vegetables for wholesale. Edwin Matuszko was one of seven farmers who founded the Pioneer Valley Growers Association in 1980, and he has been a leader in the coop ever since. The land, featuring beautiful Hadley loam soils, has been under Agricultural Preservation Restriction since 1990. Twin Oaks has worked with UMass Vegetable Program in many projects over the years, and is currently involved in experimental projects for butternut, cabbage, and Indian corn. We'll start at the home farm to see equipment, packing facilities,and nearby fields, and then get on the hay wagon to visit several fields within a mile of the farm. Light refreshments will be served. The tour will happen rain or shine!

Highlights of the tour will include:

-- New or specialized equipment: planter adapted for seeding cucurbits with Admire application; Einbock weeder; drop nozzle sprayer for drenching early season cabbage and for insecticides in many crops

-- Packing and storing facilities, including butternut storage

-- Growing and selling minor crops including leeks, beets

-- Indian corn, using Trichogramma wasps to improve ear quality and reduce culls without spraying

--Dealing with Phytophthora blight through rotations and water management

--Using Perimeter Trap Crops of buttercup and blue Hubbard squash around butternut.

--'Baby cabbage' – a new marketing strategy for cabbage

-- IPM in peppers

Directions

From I-91, Southbound: Take the exit for Rte 116, go south (LEFT off ramp). Follow 116 across the Ct River through Sunderland and Hadley, take the UMass exit., go RIGHT off the ramp. At the T (North Maple St) turn RIGHT. Take the first RIGHT onto Stockbridge Rd. ('dead end'). Twin Oaks driveway is the second on the left.

From I-91, Northbound: Take Exit 19 for Rte 9 (Northampton, Amherst), turn RIGHT off the ramp, going EAST across the Ct River. Go about 5 miles, past malls, to turn LEFT Rte 116 North,. Take the UMass Exit, turn LEFT off the ramp to the T at North Maple. Follow directions above.

We hope to see you threre! For more information, call (413) 545-3696.

SWEET CORN UPDATE

Sweet corn growth has been excellent this week. Growers who were able to take advantage of the window of warm, dry weather in late March and April to plant corn under plastic are now seeing silk, pollen shed, or emerging tassels. This will be ready to market in early July. Everyone also has some whorl-stage corn with spotty emergence and uneven size, a clear sign of corn planted in mid May when soils were cold and wet.

European corn borer flights were still high this week. We have seen uneven numbers over the past several weeks – a weak flight of Z moths in many locations, and some ups and downs in catches. This may have been caused in part by the many cool nights (<50 degrees F) when moths were not active. Catches were lower in some places and higher in others this week, but still quite strong (11-99 per week, or 1.5 to 14 per night). Meanwhile we see many newly hatched or partly grown borers in the developing tassels. They are in the young tassels inside the whorl, and move into the stalk of the tassel as it emerges. If not controlled, they will move down the stalk to burrow in the back side of the ear when it forms. In unsprayed fields this week, we found from 20 to 80 percent of the plants infested. **Scout your pretassel** corn and if >15% have borers, spray as tassels emerge. This is when borers are most exposed and easily killed. Given the strong flight, **corn in silk** should be sprayed on a weekly basis. New eggs will continue to be laid until the flight goes down.

European Corn Borer Caterpillar Feeding on Tassel and Stalk

If you have corn in silk and want to monitor corn earworm flight, be sure to get your pheromone traps up soon! The most readily available trap is the Heliothis Scentry nylon net trap. Hercon luretapes for corn earworm (**Helicoverpa zea**) have proved reliable over many years. Sources include Gemplers and Great Lakes IPM. Place IN the cornfield, with the trap base at ear height. Corn earworm is being captured in low numbers in Pennsylvania and western New York. We have seen an occasional corn earworm larva while scouting tassels; these are not a threat to ears. We have set up earworm traps at our scouting sites wherever possible.

•Weekly European Corn Borer and Corn Ear Worm Trap Counts

Location	Z I	EII	Total ECB	CEW
S. Deerfield, UMass	4	7	11	0
S. Deefield	7	10	17	0
N. Hadley	6	13	19	0
Whately	6	36	42	0
Hadley (1)	8	11	19	0
Hadley (2)	4	50	54	0
Easthampton	4	11	15	0
Feeding Hills	35	22	57	3
Northbridge	31	25	56	1
Dighton	12	12	24	0
Lancaster	5	8	13	0
Southwick	38	23	61	2
Pittsfield	0	0	0	0
Dracut/ Tewksbuty	20	68	88	0

STUNTED LITTLE YELLOW PLANTS, WILL THEY RECOVER?

It depends. The weeks of rain have set farmers back but also have set the crops back too. There are two major reasons. The first is that the roots of nearly all species of plants must have oxygen available to them and when the soil becomes waterlogged all of the air spaces are filled. Roots stop absorbing nutrients, especially nitrogen. If it stays wet long enough the roots die.

The second cause of the hurt plants has to do with the way nitrogen behaves in the soil. Nitrogen can be found in soil in many forms such as the gas nitrogen, as part of the proteins in organic matter and as ions such as nitrate, nitrite and ammonium. Most plants can only pick up the nitrogen when it is in the nitrate form and some when it is in the ammonium form. In soil that has air and moisture but not too much, nitrogen cycles around these different forms by biological activity and some is always passing through the nitrate form and is available to crops. When the soil is too dry, too cold or too wet the cycling stops or can even change direction so the nitrogen is lost from the soil either by leaching or by reverting to a gas form and goes out into the atmosphere. This may happen only in portions of fields where water puddles.

When the rains of May and early June came some of the nitrate was lost by simple leaching. When the soil became waterlogged and anaerobic the nitrate reverted to nitrogen gas and was lost. If most of your nitrogen was in the nitrate form at this time, it is gone. Folks who use chemical fertilizers will probably have to reapply it. The nitrogen that was in organic forms such as seed meals, fish meal, compost and livestock manure probably will still have much of the nitrogen left because the soil became cold and anaerobic before the bacteria converted the organic nitrogen to nitrate. Farmers just have to wait for the air spaces to reappear in the soil and the bacteria to get to work. Of course, this should have happened in April and so it may be wise to supplement your crops with a bit of available nitrogen while this is happening now in the middle of June. And, non of this will help those crops whose roots died.

Spring in New England is nothing but fun.

-- Eric Sideman, Maine Organic Farming and Gardening Association, excerpted from the June 17, 2006 Pest Report

OZONE INJURY OBSERVED IN POTATO

The following article from Long Island applies well to New England. Every summer the air pollutant ozone reaches concentrations on Long Island sufficient to cause injury in sensitive crops, which includes many vegetables. Thus it was not surprising when injury was observed in potato. Bronzing occurs on leaves of beans, potatoes and tomatoes. Injury on cucurbits typically consists of small white spots resembling injurycaused by fertilizer burn or drift from an herbicide like paraquat. Symptoms typically occur on mid-aged leaves because they were most actively respiring at the time ofthe high ozone event. Symptoms are less likely to occuron plants with inadequate water because their stomates usually are closed during the afternoon when ozone typically is at its highest concentration.

-- Margaret Tuttle McGrath, excerpted from the June 16, 2006 Long Island Fruit and Vegetable Update, number 14

SQUASH BUG IN VINE CROPS

Adult squash bugs (*Anasa tristis*) are flat, gray-brown, and usually found on the underside of leaves or in cracks in the soil. Typically squash bugs do not reach pest levels in vine crops; however, some growers have found high numbers and resulting crop damage in recent years. Squash bugs can cause both leaf and fruit injury if numbers are high. Photos of adults, nymphs and eggs are in the *Pest Identification Supplement* to the *New England Vegetable Management Guide*. The Supplement is available in hard copy from the UMasss Outreach Bookstore (413-545-2717)

Squash Bug Nymphs, Anasa tristis

or as a downloadable pdf file at the Guide website (http://www.nevegetable.org); photos are on the web individually at http://www.umassvegetable.org)

Crops affected. Squash bugs are most attracted to Hubbard squash, summer squash, pumpkins, watermelons, muskmelons, cucumbers, and butternut squash in decreasing order. Thus, squash bugs are most damaging on summer squash and zucchini, pumpkin and Hubbard squash. Because of low attraction and low survival rate, squash bugs do not usually become a pest on cucumber, watermelon, butternut squash and muskmelon. If summer squash gets away from you and gets too big to harvest, squash bugs will move in and feed on the unharvested fruit.

Damage. 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, symptoms that resemble bacterial wilt. If you see these symptoms and are not sure of the cause, look for presence of squash bugs and also contact the Disease Diagnostic Lab (413-545-3208 to send a sample for diagnosis.

Squash bugs may also vector a relatively uncommon but serious disease, Cucurbit Yellow Vine Disease, caused by the bacterium *Serratia marcescens*. The presence of this disease was first noted in New England in 2002. If this disease has occurred on your farm, it is critical to focus on controlling early season squash bug adults to prevent its spread. A good article by Jude Boucher on cucurbit yellow vine may be found on the web at http://www.hort.uconn.edu/ipm/veg/htms/cucrbinct.htm.

In late summer and fall, large nymphs and new adults can damage the fruit of fall vine crops.

Life Cycle. Adults over winter in crop residues and protected sites in or near the field. Squash bug eggs are laid in tidy clusters (usually on undersides of leaves in the notch between leaf veins) and change color from yellow to bronze shortly before hatching. Nymphs are light gray with black legs and go through 5 molts and become more brownish as they grow to adults. Only adults have wings and fly. There is one generation per year.

Management. Scout for squash bugs adults and eggs by searching upper and lower leaf surfaces and soil cracks around the plant. The population level that will be damaging to the crop will vary with the crop and its stage of growth. If you see more than one egg mass per plant, that may be sufficient to cause damage as the eggs hatch and nymphs feed. Conventional insecticides include several synthetic pyrethroids and carbamates (see the *2006-2007 New England Vegetable Management Guide* for details); however note that these are toxic to bees and should be used cautiously during flowering. The only OMRI listed (organic) product is azadirachtin (Neemix 4.5) for application to young squash nymphs. Target sprays to control nymphs as soon as they hatch, as adult squash bugs and older nymphs are more difficult to control after they develop their hard exoskeleton as they mature.

Cultural practices also influence squash bug numbers. We have observed higher numbers in fields with hay or straw mulch and in low-till or no-till situations where cover crop residues are high. They may prefer the shelter provided by high residues. Because squash bugs tend to hide and congregate in protected locations, trapping can be used in small plantings. Place some boards on the ground and check underneath them in the morning; destroy bugs found underneath. Blue Hubbard squash as a perimeter trap crop has shown some efficacy in trapping squash bugs as well as cucumber beetles, because it is preferred over many other vine crops. In Texas, many growers have successfully used early-planted straightneck summer squash ('Lemon Drop'or 'Hyrific') as a trap crop in the border rows of their watermelon fields to attract and control squash bugs to manage CYVD.

There is a colorful tachinid fly, *Trichopoda pennipes*, that lays small white eggs on the side or underside of squash bug adults and nymphs. Unfortunately, these fly eggs do not hatch and kill the squash bug in time to prevent reproduction and feeding by squash bugs.

-- R. Hazzard

VIDEO: FARMERS AND THEIR ECOLOGICAL SWEET CORN PRODUCTION PRACTICES: SPECIAL OFFER.

As part of the 2006 sweet corn project funded by EPA and the New England Vegetable and Berry Growers Association, we would like to make available to growers copies of **Farmers and their Ecological Sweet Corn Production Practices**. Produced in 2001, this video features farmers from all over New England talking about their innovative production practices in sweet corn. These include cover crops for fertility, cultivating tools for weed control, using soil temperatures to schedule succession plantings, scouting and using pheromone traps for insect pests, spray equipment, and selecting lower risk materials. Though it was produced before the newer low risk products (eg Spintor/Entrust; Avaunt; Intrepid) were available, the growers' comments on using other products such as Bt's (eg, Dipel, Biobit, Javelin) are very relevant.

Special Offer: we will mail this video to you FREE -- while supplies last! Contact Amanda Duphily at 413-577-3976 or email rhazzard@umext.umass.edu. Give us your name, addresss, phone, email (if available) and how many acres of sweet corn you grow. Note: currently this is only available as video, not as DVD. That may change soon!

The video is normally available for $15.00 plus postage

and handling from the UMass Outreach Bookstore.

We are finding that many sweet corn growers don't know that this video exists --- but they are very interested when they hear about it.

EARLY BLIGHT OF TOMATO AND POTATO

Early blight caused by *Alternaria solani* occurs wherever potatoes and tomatoes are grown. Uncontrolled, the disease may cause serious defoliation, resulting in decreased yield and quality.

A. solani survives between crops on infected plant debris, soil, other solanaceous host weeds and can be carried on tomato seed and infected tubers. The fungus enters the leaves directly or through wounds. Primary infection can occur on older foliage early in the season, but most secondary spread occurs as the plants age. Actively growing, young tissue and vigorous plants with adequate nitrogen generally do not express symptoms. Infection is favored by mild, rainy weather.

Early blight occurs on the foliage, stem, and fruit of tomato. It first appears as small brown to black lesions on older foliage. The tissue surrounding the initial lesion may become yellow, and when lesions are numerous entire leaves may become chlorotic. As the lesions enlarge, they often develop concentric rings giving them a 'bull's eye' or 'target-spot' appearance. In the late summer when conditions are favorable for disease development, lesions can become numerous and plants defoliated, reducing both fruit quantity and quality. Fruit can become infected either in the green or ripe stage through the stem attachment. Lesions

Early Blight on Tomato Leaf

Early Blight on Tomato Plant

can become quite large, involve the whole fruit, and have characteristic concentric rings. Infected fruit often drop and losses of 30-50% of immature fruit may occur. Foliar symptoms on potato are quite similar, though defoliation rarely results. Tuber lesions are dark, sunken, and circular often bordered by a purple to gray raised tissue. The underlying flesh is dry, leathery, and brown. Lesions can increase in size during storage and tubers become shriveled.

Management

•Use resistant or tolerant cultivars.

•Start with disease-free seed, transplants, and seed tubers.

•Use long crop rotations, eradicate weeds, and eliminate volunteer plants and cull piles.

•Plow under plant debris after harvest.

•Fertilize properly and keep plants growing vigor ously.

•Handle potato seed tubers carefully to prevent wounding.

•Permit potato tubers to mature in the ground before harvesting and avoid bruising when handling.

•Spray regularly with fungicides. Spray applications should be scheduled by spore trapping or forecasting systems (TOM-CAST) to be most effective. Early season applications by themselves often fail to control secondary

spread of the disease.

•In tomato, use stake and weave trellis systems to raise foliage off the ground and allow faster drying each morning and after rainstorms. This has been shown in several studies to reduce early blight in tomato.

Chemical recommendations:

azoxystrobin (Quadris): 5 to 6.2 fl oz/A (0 dh, REI 4 h). Do not apply more than two sequential applications before alternating with a fungicide with a different mode of action. Resistance Group 11.

chlorothalonil (Bravo Ultrex 82 WDG): 1.3 to 1.8 lb/A (0 dh, REI 12 h). Good rotation partner for Quadris. Resistance Group M5.

Maneb/mancozeb (Maneb, Penncozeb, Manzate, Dithane): Rates vary according to formulation. See labels for rates and timing. (3 dh, REI 24 h).

Mancozeb plus zoxamide (Gavel 75DF): 1.5 to 2 lb/A (5 dh, REI 48 h) Apply at 7 to 10 day intervals when conditions are favorable for disease development. Add Latron surfactants to improve performance. Resistance Groups ME & 22. Registered for tomato.

pyraclostrobin (Cabrio EG): 8 to 12 oz/A (0 dh, REI 12h). Apply at the first sign of disease and repeat at 7-14 day intervals. Do not apply more than 6 applications per season or rotate with Quadris. Resistance Group 11.

--Prepared by M. Bess Dicklow, UMass Extension Plant Diagnostic Lab, Dept of Plant Soil and Insect Science, 108 Holdsworth, University of Massachusetts, Amherst, MA 01003-9285. Tel.413-545-3208. mbdicklo@umext.umass.edu

TOMATO UPDATE

Tomatoes that were set out in late May or early June have suffered from wind damage as well as long periods of gray wet days, wet soils, and cool nights. The good news (if there was any) was that there were no late frosts. Recent heat has encouraged better growth and fruit set. Staking, suckering and tieing are major jobs right now. Typical practice for stake and weave systems is to sucker up to one branch below the first flower cluster. Try to keep up with weaving the second and third strings, since weaving takes a lot less time if you don't have to haul up toppled-over tomato vines.

Our recent humidity and warmer nights – following a period of with long days and nights of cool, wet conditions – raises questions of how and when to apply chemicals for protecting tomatoes from late blight, early blight, and bacterial diseases. Late blight is favored by cool, moist conditions while early blight does not develop until the long dew periods at night are over 55 degrees F. As tomato foliage thickens and leaves are slower to dry out, plants begin to set fruit and use more nitrogen for both fruit and foliage, and humidity increases, the risk of early blight increase. This typically happens in late June and early July. How to decide when to start a fungicide schedule? One approach is to scout regularly and begin when you see the first early blight lesion anywhere in the field. Another approach is to use a tomato disease forecasting system such as TOM-CAST, the first fungicide application based on accumulated disease severity values (DSV's), with first fungicde recommended at cumulative DSV= 35. The UMass Vegetable Program does not currently have the leaf wetness data needed for TOM CAST as we have in the past. Weather monitoring devices which output disease forecasts can be set up on your own farm. Weather and disease forecast data for your farm location can also be purchased (and sent as daily emailed forecasts) from firms such as Sky Bit (1-800-454-2266).

Managing bacterial diseases is another important factor. At this point in the season, key points are to avoid spreading bacteria while pruning by sterilizing tools frequentsly (eg bucket with chlorine at the end of each row; switch pruners and let one soak while you do the next row); use a copper application (see *2006-2007 New England Vegetable Management Guide* for products) after wounding events such as wind or pruning; avoid airblast sprayers which spread bacteria and use a boom with drop nozzles if possible. We will publish more on bacterial diseases in subsequent newsletters.

CUCURBITS

This has been the week of the beetle. Striped cumber beetles seem to have been ready and waiting to pounce on every new field of pumpkin and squash as it emerges out of the ground. One grower found that cotyledons were being eaten down within the first 24 hours after emergence and he needed a spray less than one day after the crop came up. Consistently, borders close to woods are the most heavily fed upon. This has occurred even where last year's cucurbit fields were on the opposite side of this year's field from the woods.

We have been very pleased thus far with the 14 fields in the Connecticut Valley where perimeter trap crops were planted around butternut squash : wherever trap borders of Hubbard or Buttercup surround the entire field, without gaps larger than 8-15 feet, and the borders were treated with insecticide, beetles are piling up in the borders and the main butternut crop is below threshold. We use a threshold of 1 beetle per plant until the 4 leaf stage, then raise the threshold for sprays to 2 beetles per plant. It is striking to see piles of dead beetles on the border row, and clean, unsprayed plants just 5 feet away. With Hampshire College

Farm, we are testing several organic strategies for PTC: using Surround as a repellent in the main crop, using spinosad (Entrust) or frequent suction on the border crop.

The good news is that warm weather is great for vine crops. The first zucchini and summer squash – set out early on plastic -- is being harvested. Early planted butternut is about ready to start some vines. Meanwhile, plenty of fields were seeded late and are just emerging.

Squash bugs are present and starting to lay eggs. See article on squash bug biology and management.

If you have a field with low areas that tend to hold water after rains, consider seriously tilling up the section that holds water. It will be a nursery for Phytophthora blight. Choosing to destroy a small section is a lot easier than the risk that you might have to walk away from a whole field infected with this disease.

POTATO, BEANS: SCOUT FOR POTATO LEAFHOPPER

Potato leafhoppers migrate each year from the South and are now just beginning to appear in potatoes and other crops. These pests can cause significant injury – often before many growers realize they have a problem. The key to preventing crop damage is to control the adults early, before they have time to feed and produce offspring.

Scouting- Now is the time to start scouting beans and potatoes. Walk out into the crop and brush the leaves with your hand. If you see small white things darting around, you've got potato leafhopper adults. Adults are about 1/4 inch long, light yellow-green, and fly up from foliage when it is disturbed or shaken. They can also be monitored with sweep nets. Adults lay eggs inside the stems and petioles of host plants. The eggs are whitish, elongated and are about 1/24-inch long.

Once you have seen adults, look closely at several leaves. You may see small, elongated light green insects scurrying to hide from you-these are potato leafhopper nymphs. Nymphs are found on the underside of leaves, light green, wedge-shaped and very fast-moving.

Damage- Adults and nymphs feed by inserting a needle-like beak into the plant and sucking out sap. They also inject a toxin into the plant, which interferes with the vascular system of the plant and causes yellowing, browning, and curling of leaves. In potato, leaf margins turn brown and brittle first, followed by death of entire leaves. In beans, the leaf turns mottled brown as if infected with a disease before dying completely. Both adults and nymphs cause damage. Plant injury and yield loss can be significant, especially if leafhoppers arrive when plants are young. (Photo:)

Varietal resistance- Later-maturing potato varieties including Katahdin, Elba, Green Mountain, Kennebec, and Blossom have some resistance, and may tolerate PLH infestations with less yield loss. Yukon Gold, Red Norland and other red potatoes, and many other varieties, are very susceptible. Snap bean variety Labrador is reported to be more tolerant. Long bean, a popular Asian variety, seems quite tolerant as well.

Thresholds- Potato: A threshold of 1 adult per sweep of the net, or 1 nymph per 10 leaves, is used to determine if a spray is needed in potato. Check 25 compound leaves throughout the field to determine numbers per leaf. Beans are more susceptible when they are young than at later stages; threshold is one nymph per two trifoliate leaflet during pre-bloom. Eggplant: Although eggplant is not a favorite host, damage can occur if PLH numbers build up to high levels. University of Connecticut has established a threshold of 1.5 leafhopper per leaf in eggplant.

Controls- In potato and snap beans, there are several synthetic pyrethroids, carbamates, and neonicotinoids that are labeled for control of PLH (See 2004-2005 New England Vegetable Management Guide). In Potato, furrow treatments with neonicotinoids (Admire or Platinum) may control leafhoppers; however, crop should still be monitored. For resistance management, DO NOT use foliar neo-nicotinoids following a furrow treatment with the same class of insecticides (Actana, Provado).

PLH controls are not often used on organic farms, perhaps because growers don't realize how much yield loss this pest can cause. Pyganic EC, an approved organic pyrethrin product, has been shown to be effective against PLH adults and nymphs especially at higher rates. Two to three sprays of Pyganic, 7-10 days apart, beginning as soon as you find significant numbers of adults in your planting, should halt their damage and prevent a buildup of nymphs. This is not a long-lived material, and will decay under sunlight; apply in the evening for greater efficacy. Other organic products that have been tested have shown little or no efficacy, with the exception of Diatect, which is a mixture of diatomaceeous earth and Pyrethrin

– R Hazzard, adapted from Brian Caldwell, Farm Education Coordinator , Northeast Organic Farming Association of New York; Brian Schultz, Hampshire College

Vegetable Notes, Ruth Hazzard, editor and Kate Reidel, Assistant Editor. 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.