UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

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CROP CONDITIONS

With another heat wave baking both soil and crops, people are irrigating again. Summer crops are still pouring in and harvest of fall crops started early, so it is an especially hectic time. Watch fall Brassicas for caterpillars, which are unusually high this season and continue to produce new flushes of young caterpillars. In advance of approaching storms (i.e. during hurricane season) when disease inoculum for several diseases is relatively high, fungicide protection is advisable.

Downy mildew has been confirmed on several cucumber plantings in the state, and has been found in pumpkins in the Northeast. With the forecasted rain and cool temperatures over the weekend, all cucurbit crops are at risk from downy mildew. See last weeks update for details on control recommendations.

Pumpkins and squash are ripening early. If foliage is going down from powdery mildew or downy mildew the risk of sunscald, especially in acorn and buttercup squash, or injury to pumpkin handles increases. We recommend that growers harvest as soon as crops are mature and store under proper conditions, if it is at all feasible. Attention to curing and handling will go a long way toward improving the life of winter squash and pumpkin fruit. If you need to hold fruit in the field, using a protectant fungicide (eg chlorothalonil) can help protect the fruit and handles. Ideally, pumpkins would be cut one to two weeks prior to marketing. The discussion of how early to cut handles is an old one with many different opinions. One view is that it is advisable to cut the handles from the vine to save them from advancing powdery mildew and reduce shrinkage. Whether or not handles shrink and shrivel after cutting is affected by plant stress, genetics (variety), moisture and temperature conditions, and disease.

During September, Vegetable Notes will be published every two weeks. In the meantime, any urgent updates will be sent to our emails distribution list.

STORAGE DISEASES OF ONION AND GARLIC

Botrytis Neck Rot caused by *B. alli* occurs primarily on bulbs in storage. Infection in seed grown onions is initiated at bulb harvest. The pathogen overwinters as sclerotia on rotting bulbs or in the soil and may be seedborne. Onions can be non-symptomatic and disease usually develops during storage. Symptoms generally begin in the neck area as decay which gradually moves downward. Scale tissue becomes water-soaked and soft. White to gray mycelium may appear between scales and sclerotia and gray mold form on the shoulders of bulbs. The development of this disease is not well understood as onion plants remain relatively symptomless. The fungus produces conidia on dead or dying plant debris and penetration is usually through succulent neck tissue or mechanical wounds. The fungus is unable to infect well-dried neck tissue. A healthy onion with a well-cured neck is rarely affected by neck rot in storage.

In garlic, the disease usually appears first on necks near the soil line at any time after spring greenup when weather conditions permit. The disease becomes worse when it starts early in the season. Extensive development of sclerotia is best seen on maturing bulbs just before and during harvest. The fungus moves rapidly into the succulent garlic bulb's neck region,

producing a water-soaked appearance. A gray mold develops on the surface of or between garlic scales, later producing black bodies (sclerotia) which develop around the neck. Before bulbing, plants may die or recover if weather permits. Bulbs infected late break down to a soft mass, and secondary infections by other organisms follow.

Black Mold caused by *Aspergillus niger* occurs in the field, during transit, and during storage. The fungus grows saprophytically on dead tissue and is a common inhabitant of the soil; spores are also common in the air. Bulb infection usually occurs through injured tissues in the neck or wounds on roots, basal stem plates, or outer scales. Uninjured bulbs are seldom infected. Seeds may be infected and the pathogen disseminated in infected seeds or transplants. Preemergence damping-off can occur if infected seed is planted. The disease is favored by warm temperatures or under warm storage conditions. Infected bulbs display a black discoloration at the neck or in bruised areas, lesions on outer scales, or black streaks beneath outer scales. As the disease develops, the entire bulb may appear black and shriveled as all scales are infected. Soft rot bacteria may invade and the bulbs exhibit a watery rot. Some bulbs will show no external symptoms, but when the bulb is cut open, central portions may be gray to black.

Fusarium Basal Plate Rot is initiated in the field on onions and garlic during growth. Affected bulbs may display no symptoms at harvest but subsequently rot in storage. Affected bulbs may appear discolored with internal scales or storage leaves appearing brown and watery. Infected onion stem plates may be brown with white mycelium. Infected garlic may display a reddish purple discoloration on stems, bulbs, or bulb sheathes.

Blue Mold of onion and garlic may be caused by several *Penicillium* species. Penicillium decay of garlic caused by *P. hirsutum* is responsible for poor plant stand in the field and storage decay. Symptoms in the field include clove decay after planting and wilted, yellowed, or stunted seedlings. Infected plants are weak and stands are poor. Other species of Penicillium cause Blue Mold on onions and may be prevalent on fresh garlic. These fungi attack a wide range of fruits, vegetables, bulbs, and seeds; they are common in the soil growing on infected animal and plant debris. Symptoms of the disease start as pale blemishes, yellow lesions, and soft spots. A blue-green mold develops on lesions. When bulbs are cut open, one or more of the fleshy scales may be discolored and water-soaked. In advanced stages, bulbs may deteriorate into complete decay. In garlic, the pathogens survive in infected cloves. Invasion of onions is usually through wounds, sunscald, or freezing injury, although the fungi are able to infect uninjured bulbs. Blue Mold pathogens are often present in internal scales of onions with neck rot.

Smudge caused by *Colletotrichum circinans* affects onions, leeks, and shallot, but not garlic. The pathogen is soil-borne, surviving in colonized onion debris and it can persist in soil for many years. The pathogen is spread by infested plant material and soil and is favored by warm, wet weather; it can complete its life cycle in a few days when conditions are favorable. Smudge appears on dried outer scales and lower portions of the bulb as dark green dots which turn black. The symptoms may be scattered but often appear in distinct circular, concentric rings. The fungus produces enzymes that break down cell walls and allow mycelium to proliferate throughout the bulb.

Storage Disease Management

- Control other diseases and insects in the field to prevent entry of storage rot organisms.
- Black Mold can be reduced by applying calcium carbonate to protect wounds caused by leaf clipping.
- Bruising and other mechanical injury should be avoided when bulbs are harvested, stored, or transported.
- In some instances, treating of bulbs with fungicide before storing may be recommended.
- Cure onions and garlic with hot, dry conditions. A healthy onion with a well cured neck is rarely infected with neck rot during storage.
- Inspect garlic and onion before storing and discard all symptomatic bulbs.
- Practices that hasten curing include undercutting bulbs to sever all roots, avoiding nitrogen fertilization late in the season, and proper plant spacing.
- Ideal storage conditions are at 32-34˚ F with 70-75% relative humidity.

M.B. Dicklow, UMass Extension

SHELLED CORN FOR GREENHOUSE HEAT 2010

Agricultural Innovations Project, 2008-2011

We would like to invite interested growers to participate in a project that will increase energy independence, support local agriculture, and insulate participating growers against the kind of drastic increases in fuel costs that we saw just a few years ago.

This is the last year of a project that is exploring the economic and environmental feasibility of using locally grown grain corn as fuel for heating greenhouses. Growers who participated in 2008-2010 found that the furnaces they installed were cost efficient, reasonably simple to set up and use, and did an excellent job of reducing or eliminating the need for supplemental heat in their greenhouses.

Our goal is to foster a regional network of renewable energy producers and users with a focus on grain corn but also including other types of renewable energy. The emphasis of this project is on making the best possible use of our land for food and fuel production and not to detract from our ability to grow food crops. We're envisioning a system where fuel crops become a valuable rotational crop in vegetable farms and an alternative revenue stream for dairy farmers in a time of shrinking demand for silage; not a system in which the production of fuel shifts acreage away from food production.

We would like to find farms that represent a range of vegetable and floriculture businesses in Massachusetts and various types of greenhouse designs, crops and heating needs. We have funding to provide cost-share for purchase of one corn furnace or boiler per farm (up to 50% of the cost, maximum $3000 per farm) for a limited number of farms. Although we may not be able to provide cost-share funds for all growers who are interested, we will be able to provide useful information and contacts to all interested growers.

We have included an application as a supplement in the email version of this week's newsletter. It is also available on our website, www.umassvegetable.org. If you are interested in applying to be a part of one of these regional networks and receiving cost share for the purchase of a biomass furnace please fill out the application and return to it the address listed on the application form.

CHECK CROP ROOTS

As the summer winds on into fall, now is a good time to take a closer look at your growing crops. Whether we are talking about a field of corn or of tomatoes, roots are the base for production. At this point in the growing season, all of these crops will be at their maximum root mass as the crop works to finish off the yield. The on again off again (mostly off again) rains that we have been having this year have certainly posed a challenge to many crop root systems. Roots are responsive to the environment. New roots can be started or initiated within 24 hours of a change in the soil environment. For example, most of the summer has seen dry punctuated by occasional rains. The root systems of most plants slowed or stalled in growth during the hot dry weather, but once the rain came the plants responded quickly. Roots exist in a much more complex environment than the shoot or upper part of the plant. Shoots deal with weather and are in the open air while roots deal with daily weather but exist and grow in the soil, a complex arrangement of mineral particles, organic matter and air or water filled spaces. The density, pH, water content or nutrient content of the soil can vary greatly within the area exploited by a root system. That smooth soil surface hides a wealth of variability.

At one time it was believed that plants grew roots as the rest of the plant grew during the spring and the plant used those very same roots throughout the summer until it died in the fall. Gradually it came to be understood that roots generally need actively growing surfaces or root tips for nutrient uptake. Further careful measurements have shown that roots are constantly growing, dying and sloughing off the plant. For example the finest lateral roots only live about 2 weeks. This constant growing and dying of roots changes the soil close to the root system, creating a localized environment that is better for root growth and other living organisms like bacteria. Studies have shown that roots only need 10 percent of their root surface at any point in time. So why does the plant commit that many resources to roots? The extensive root system allows the plant to take nutrients and water from other areas within the soil profile, so once a location has been stripped of nutrients the root system can access them elsewhere.

Late summer is a good time to get out with your shovel to take a close look at your roots. A good root system is consistent

and well developed through the soil profile - you should not see a concentration in a small area or a witches broom effect. A larger root system picks up maximum soil nutrients and water increasing the amount available for building yield. So before this summer is over take a few hours to get to know your crop's roots – they may be trying to tell you something.

- Anne Verhallen, Soil Management Specialist, OMAFRA, Ontario

HARVEST AND STORAGE OF POTATOES: QUICK CHECKLIST ON WHAT TO LOOK FOR AND WHAT TO DO.

This season's growing conditions present a very different set of challenges for end-of season potato management compared to 2009. While there has been very little late blight in Massachusetts this season, there are other pathogens that can infect and spread during harvest and storage. Bacterial soft rot, Fusarium dry rot, pink rot, and Pythium leak are four serious tuber rotting pathogens that cause the most significant losses in storage. These diseases can be brought in on infected tubers or survive on storage debris. Many of them take only a few weeks to destroy a tuber and then spread through the storage pile. Because of generally dry conditions, we might see lower than normal levels of soft rot and pink rot. However, early maturity, high temperatures and dry conditions create other issues. Growers may be aiming for short term or long term storage and sales, or some of each, and attention to the harvest, curing, and handling issues can help maintain quality.

Two of the main management practices that will reduce losses to these diseases after harvest are allowing tuber skins to mature in the field before harvesting, and eliminating free moisture in storage areas. However, Rhizoctonia black scurf and silver scurf may be at high levels on the tubers and will increase in severity the longer the tubers remain in the soil. Therefore to avoid these diseases, as soon as skins are set, harvest should begin. If the weather remains wet during the harvest, soil may adhere to the tubers during harvest. This soil will promote conditions for soft rot.

Potatoes should be harvested at pulp temperatures that allow for successful storage. Allowable pulp temperatures will vary based on storage ventilation systems, varieties, availability of cooling air, and timeliness. If potatoes are harvested during hot weather (above 80F) and cool off slowly the likelihood of storage rot is increased. Potatoes destined for storages with refrigeration could be harvested warmer to a maximum of 62 to 65°F pulp temperature. Storages with no refrigeration should not be loaded with potatoes with a pulp temperature above 60°F. Potatoes newly loaded into storage will require fresh air, humidity, and temperature goals near 55°F during preconditioning. If pulp temperatures are higher than recommended it is more difficult to manage critical environmental conditions once in storage. Time your harvest when cooling air is available to promote open outside doors and 3 to 6 hours of fresh air per day. Questionable potato lots should be harvested closer to 55° F if they must be stored. For later harvests, avoid harvesting at temperatures lower than 45 degrees as this increases the occurrence of bruising.

Below is a list of guidelines that can be used during harvesting and storage to help prevent the spread of the diseases mentioned above and to maintain high quality potatoes:

Vine killing

* Vine kill stops tuber growth at the desired maturity, stabilizes the tuber solids, and promotes skin set.
* Mechanical or chemical methods or a combination of the two can be used to kill potato vines.
* More than one application of a chemical desiccant may be required.
* Vine killing permits easier digging and harvesting operations.

Disease management

* Foliar diseases, especially late blight, are still a threat as vines begin to die or vine killing methods are implemented. These pathogens can spread to tubers and cause problems in storage if they are not controlled prior to harvest.
* Application of a desiccant followed by a fungicide application a few days later is recommended instead of applying the desiccant and fungicide at the same time. This way thorough coverage of the remaining plant material can be achieved.

Skin set

* Most tuber diseases require a wound to get into the potato. Good skin set greatly reduces the amount of wounding at

harvest and increases the storage ability of the tuber.

* Allow for skin set on the tubers in the field for at least 10-14 days before harvesting.

Wounding and bruising prevention

* Check harvesting and transporting equipment to make sure it is working properly and that it causes minimal damage to tubers
* Harvest when the soil is moist but not too wet. Tuber pulp temperatures are around 60-65°F will make the potatoes less susceptible to bruising and wounds.

Grading

* Grade out diseased tubers as quickly as possible. The longer they are mixed with healthy tubers, the higher the chance of disease spread.

Healing period

* The 'curing', 'suberization' or 'wound healing' period immediately after harvest is critical to successful storage.
*Store tubers at about 50-60°F at high relative humidity (95%) for 10-14 days to allow wounds to heal before placing potatoes into colder storage. Lower RH results in poor suberization.
* Airflow over and through the pile is important to supply oxygen and prevent condensation. However, do not overdry the potatoes during curing.

Storage

* Before storing potatoes, facilities should be cleaned thoroughly and inspected. Make sure to check the insulation, fans, humidifiers, and ventilation system. If any of these are in poor condition it could result in losses due to disease.
* After the curing period, cool potatoes gradually and steadily to the holding temperature suited to your goals: 38-40 F for tablestock, and seedpotatoes; 45-50F for chipping or 50-55 F French fry stock.

Diagnostics

* Don't just guess, and don't assume that every tuber rot that you see is late blight. Send samples to the Plant Disease Diagnostic lab to get an accurate diagnosis. Different tuber blights need different management, and even knowing what you need to do next year to prevent the problem is vitally important. Phone for UMass Diagnostics Lab: 413-545-3209.
* A good online resource on tuber diseases can be found at http://vegetablemdonline.ppath.cornell.edu/factsheets/Potato_Detection.htm#Click2
* However, finding a photo online that looks like your problem is not the same as having a plant pathologist confirm what is on YOUR tubers!

-- R Hazzard and C Cavanagh; compiled from the following sources: Vegetable Crop Update, U of WI, 8/13/10, edited by C. MacNeil, CCE, CVP for Veg Edge, Cornell CES; New England Vegetable Management Guide; Potato Production in the Northeast: A Guide to Integrated Pest Management;

ORGANIC WHEAT RESEARCH GROWS AT UMASS

As interest in local food burgeons, the market for locally grown wheat has opened up new opportunities for growers in Massachusetts. Both vegetable and field crops growers are noting the interest in organically grown wheat among artisan bakers and consumers, and are considering how to introduce wheat into their crop rotations. However the lack of commercially available wheat varieties adapted to New England's weather and organically managed soils limits our competitive edge. US wheat varieties are bred for the conventionally managed fields in the Midwest or are bred in Canada for climates and soils vastly different from ours, and are dependent on agrochemicals for nutrients as well as disease and pest protection. Traits important for organic wheat production have been lost from the genepool of modern wheats, such as height for weed competition and extensive root system that better scavenge nutrients form the soil. Nutrition and flavor are not key traits in modern cultivars but are important for value-added organic markets. The wheats best adapted to New England's organic farms are from European countries with climates closer to ours.

In response, UMass has established an organic wheat project to meet this new market niche. Our program is coordinated by the UMass Extension team of Ruth Hazard and Masoud Hashemi in collaboration with Eli Rogosa, an organic farmer and wheat specialist who has joined our team bringing years of experience working with Mideastern and European cereal genebanks and wheat breeders. Funding has been contributed by Northeast SARE and the Massachusetts Society for Promoting Agriculture.

Our goals are to breed wheat varieties uniquely adapted to New England, to investigate how to best integrate wheat in small-scale diversified farms typical in our region, and to maintain a seedbank to conserve, evaluate and disseminate European wheat varieties. We will also be looking at how to adapt growing practices that have been developed for organic wheat in other regions such as northern New England, Quebec and northern Europe to the conditions of central and southern New England and to the needs of heritage wheat varieties.

We are focusing on winter wheats that compete well with spring weeds. We have seen good success in our trials with broadcasting a low-growing clover over the wheat beds in early spring to control weeds. Winter wheats should be planted by mid September for strong root growth and crop establishment in the fall that will lead to vigorous spring growth.

We are excited to report that after two years of trialing European organic wheats and heritage varieties grown-out from genebank collections, we have identified several wheat varieties that have out-yielded the commercially available conventionally-bred wheats, and a rare species, emmer (*T.dicoccon*) that is highly resistant to fusarium and resilient to weather extremes.

We are seeking farmer-cooperators to grow and evaluate the best wheats from our trials on your own farms. Please email Eli Rogosa: growseed@yahoo.com or phone 413 624 0214 if you are interested in conducting organic wheat trials on your farm.

SWEET CORN REPORT

The sweet corn season is winding down for the majority of growers in New England. We are now seeing the last blocks of silking corn and fields are plowed and cover crops are in. Any late season corn that is out there is still in danger of infestation from corn earworm and fall armyworm. Corn sales are steady with the hope that sales will increase as pumpkins and winter squash begin to occupy local farm stands. Irrigating is happening again where needed.

The small third generation of European corn borer flight has shown up in the Connecticut valley with Sunderland reporting 15 moths. Remember that ECB overwinter in crop debris so chop up your stalks to get a head start on control for next year. ECB survives the winter in the larval stage, protected inside the stalks of wild plants and corn stubble. Surviving larvae will emerge in the spring and infest early plantings.

Corn earworm. Despite the slightly lower trap counts found this week, growers should still be on a tight spray schedule where counts are

Location	ZI	EII	Total ECB	CEW	FAW
CT Valley					
Sunderland	5	15	16	24	0
Hadley	0	3	3	27	5
Southwick	0	0	0	13	2
Whatley	0	7	7	27	0
Feeding Hills	0	0	0	35	7
Central & Eastern MA					
Dracut	1	4	5	17	4
Concord	1	1	2	19	1
Northbridge	0	1	1	11	3
Framingham	0	1	1	17	1
Spencer	0	0	0	2	0
Still River	0	0	0	7	0
Lancaster	0	0	0	15	0
Littleton	1	7	8	22	3
Tyngsboro	0	1	1	12	1
Berkshires					
Sheffield	1	0	1	3	0
NH					
Litchfield, NH	16	0	16	64	90
Hollis, NH	4	0	4	28	5
Mason, NH	10	0	10	11	0

greater than 7 per week.

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

Trap counts show earworm is still a threat to late corn, with a high of 22 moths caught in a week in the east and 35 in the Connecticut Valley. Southern New Hampshire is still at high risk for CEW with trap counts at 64 and 90 for Fall armyworm. Growers who are within a week of picking their latest corn have applied their last spays for the 2010 growing season. For sweet corn that you expect to pick in late September or early October, continue corn earworm sprays. Spray intervals may be lengthened if the maximum temperatures are 80 degrees F or below for two or three days. Cool night temperatures reduce moth activity, flights will continue to decline, and caterpillar hatch and growth should start to slow down.

Fall Armyworm trap counts are below threshold in every location this week with the exception of southern New Hampshire. If you still have corn that is pre-silk you may want to do a scout for new FAW damage and spot treat any infested areas. Damage is easy to spot, with ragged feeding and holes in the leaves and a lot of frass in the tassel or in the silks if the caterpillars have moved down the stalk.

You can loo k at the Sweet Corn IPM Scouting Guide online at http://www.umassvegetable.org/SweetCornIPMScouting-Guide.htm, for more information on scouting and color pictures of caterpillar pests of sweet corn and feeding damage. This guide also includes a section on what you need to get a sweet corn IPM program started on your farm. Hardcopies are available by calling the Vegetable Program at 413-545-3696 or emailing Amanda Brown brown@umext.umass.edu.

- A. Brown, UMass Extension

UMASS AMHERST FAMILY WEEKEND FARMER'S MARKET SEEKS VENDORS

Sunday, October 31, 2010

UMass Amherst Fall Family Weekend is Oct. 29-31, 2010. Over 3500 people are expected to join attend.

This year a Farmer's Market will be held on Sunday October 31, 2010. All local farmers are invited to participate in our first ever Family Weekend Farmer's Market scheduled for Sunday, October 31, 2010 from 11am-2pm on the UMass campus.

The organizers are looking for farmers who grow /sell fresh produce, flowers, honey (if it is raw, it must be marked as such) , maple syrup or cheese/yogurt *

**The cheese /yogurt must be processed at a manufacturing facility.*

Set-up will be on University Drive across from the Southwest horseshoe. Famers will be able to pull into Lot 33 and park on the edge of the sidewalk. This will allow for easy access and high visibility for the families and community members driving by. There is no fee to participate.

Please rsvp to Jeanne Horrigan at jhorrigan@acad.umass.edu or call 413 545-4942 by October 1, 2010. Please provide your name, phone #, farm name, kind of produce you will be selling.

UPCOMING MEETINGS

UMass Beginning Farmer Initiative Presents

How to build a HIGH TUNNEL Greenhouse

Extend the growing season and expand your farming business!

Friday, September 17th , 2010 from 9:00 AM – 4:30 PM

Flats Mentor Farm (Seven Bridge Road, Rt. 117 Lancaster MA)

Learn about USDA programs to assist your sustainable farming enterprises. Registration is $10.00.

Directions and registration form at our website at www.flatsmentorfarm.org

New Online Cornell Courses for Beginning Farmers Debut This Fall!

Reserve Your Spot Now!

Need some guidance on the development or expansion of a farm enterprise? Can't find any trainings near you? If you're comfortable enough with a computer to consider learning online, you'll be glad to know that the Cornell Small Farms Program and Cornell Cooperative Extension are expanding offerings of their popular online courses for beginning farmers with two new online courses this Fall, in addition to our usual beginners Fall course, BF 101. Join experienced CCE and farmer instructors and 25 of your farmer peers in a dynamic learning experience that incorporates both self-paced readings and real-time virtual meetings with discussion forums, homework activities, guest presenters, and developing a customized plan for your next steps in farming.

The Cornell Small Farms Program and Cornell Cooperative Extension (CCE) present:

BF 110: Soil Health Basics: Investing in the Vitality of Your Farm

NOTE: This course will incorporate a face-to-face field day hosted by the Northeast Organic Farming Association at instructor David Belding's Cross Island Farms on Wellesley Island, NY, 4pm-7pm Oct 18th. This will be an amazing opportunity to meet your fellow coursemates and see firsthand how David has improved the soils on his farm over the past 5 years. The field day fee is covered by the course registration cost.

Instructors: David Belding – Cross Island Farms, Wellesley Island, NY, and Dan Welch – CCE Cayuga

BF 104: Financial Record-keeping: A Cornerstone of Farm Profitability

Instructors: Bonnie Collins – CCE Oneida County and Steve Hadcock - CCE Columbia County

BF 101: Taking Stock: Evaluating Your Land and Resources and Choosing an Enterprise

NOTE: You will get the most out of this course if you already have access to land. Each participant will be gathering information about their own enterprise and will begin to create a Farm Plan.

Instructors: Laura Biasillo - CCE Broome County and Dianne Olsen – CCE Putnam County

COURSE DATES: Thurs. Oct 14, 2010 to Wed. Nov 24, 2010. All courses incorporate live webinars featuring farmers, agency staff, and University faculty. See link below for webinar dates and details.

COST is $150 per course, except the Soil Health course, which is $165

TO REGISTER, or for more information on course format and requirements, please visit http://www.nybeginningfarmers.org/index.php?page=onlinecourse

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

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