UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

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IN THIS ISSUE

GREENHOUSE OUTBREAKS OF BLACK ROT IN BRASSICAS

In the past three weeks we've had reports from three different farms of severe outbreaks of Black Rot in their Brassica seedlings. In several of these cases the infected seedlings lacked the typical v-shaped lesions usually associated with Black Rot – the symptoms were wilted, papery leaves and cotyledons, similar to damage caused by excessive drying. We have not been able to tie these outbreaks to any particular batch of seed, nor any specific crop or variety or seed supplier, as it is virtually impossible to conclusively pinpoint a particular cultivar as the initial source of the infection. However, some seedlings that showed similar symptoms turned out NOT to have black rot, but to be suffering from cultural problems such as overwatering or excessive fertilizer. If you observe symptoms that appear to be black rot, a confirmation from the diagnostic lab is important.

Within the greenhouse, a few infected plants or flats can readily infect other flats, being spread by watering and transplanting activities or brushing against seedlings. Scout your seedlings carefully and keep a close eye out for symptoms of this disease. Planting out infected seedlings can cause the further spread of this pathogen and contaminate the field for several years.

Black Rot caused by Xanthomonas campestris pv. campestris is one of the most devastating diseases of cruciferous crops which can result in high losses of yield and quality. It occurs worldwide and infects all species of Brassica. (Note: there are other 'black rot' diseases, on other crop families, that are not caused by the same pathogen.) Symptoms can appear at any growth stage as yellow, V-shaped lesions that extend toward the base of the leaf resulting in wilt and necrosis. The pathogen may move into the petiole and spread up the stem or into the roots and become systemic. As the disease progresses, the veins of infected tissues turn black and the normal flow of water and nutrients is impeded. Symptoms on root crops may not be visible on foliage, but blackened veins appear in the roots. On leaf crops, infection may spread into the leaves of the head. Black Rot is often followed by invasion of soft-rotting organisms.

Xanthomonas campestris pv. campestris, a bacterial disease, plugs the water-conducting tissue of the plant with xanthan, a mucilaginous sugar. Its most important means of transmission is on seed and as little as 0.03% infection can cause epidemics. The bacteria can persist in infected plant debris for up to two years; it survives in the soil for 40-60 days. It is favored by warm temperatures and symptoms may not appear in the seedbed or greenhouse, allowing infected plants to be transplanted into the field. It is spread within the field by splashing water, wind, equipment, people, and insects. X. campestris pv. campestris can be spread long distances by infested seeds and transplants.

If you are concerned that your seedlings may have Black Rot, you can contact the UMass Plant Disease Diagnostic Lab for a diagnosis (Tel. 413-545-3209 Fax. 413-545-4385. mbdicklo@umext.umass.edu)

For growers who have determined that Brassica seedlings in their greenhouse are infected, it would be advisable to remove and destroy infected seedlings (the whole tray, not just single plants) and hot water treat seeds before making the next seeding. Instructions for hot water treating seeds can be found on the UMass Vegetable Program website at http://www.umassvegetable.org/soil_crop_pest_mgt/crops/documents/hotwatertreatmentofseed.pdf)

Management: Sanitation and environmental control are key disease management principles.

Transplant production

- Select seed that has been certified as disease-free. Some seed companies will also offer hot water treated seed upon request.
- Treat seed with hot water to eradicate the bacteria. Treat seed for 20-25 minutes at 50˚ C (122˚ F) , dry, and test for germination. This process must be done carefully and it is recommended that a small sample of seed be tested for the effect on germination first. See article on hot water seed treatment.
- Keep varieties separated in the greenhouse and in seedbeds. The bacteria are rapidly spread in water, and close spacing in seedbeds and in the greenhouse are ideal for rapid disease development. Keeping the varieties separate will help you identify problematic varieties or seed lots.
- Transplants should only be handled when the foliage is dry.
- If black rot is detected in a seedbed or on a greenhouse bench, consider all plants at the location to be contaminated. Do not attempt to separate healthy plants from diseased plants…many plants will be contaminated, but will not be showing symptoms.
- Do not trim seedlings as the bacteria are easily spread by contaminated tools.

Outdoor seedbeds:

- Fumigate or steam sterilize soil in seedbeds, and use clean, sterilized seed flats.
- Destroy all remaining plants in a seedbed as soon as transplanting operations are completed.

Field culture:

- Locate seedbeds and main crops where Brassica crops have not been grown for 4 years and avoid areas that receive run-off from areas previously planted to Brassicas.
- Avoid dense transplant or seeding rates which can prolong periods of leaf infection and favor pathogen spread.
- Do not work fields when they are wet; avoid overhead irrigation.
- Do not locate cull piles (plants or plant parts) near fields or storage areas.
- Promptly incorporate crop residues after harvest to speed decomposition.
- Monitor transplants and promptly remove and destroy infected seedlings.
- Apply copper on a preventative basis. Copper products are registered for control, but bactericides are only marginally effective in controlling bacterial diseases.

- Revised March 2010; M. Bess Dicklow, R. Hazzard, and Andrew Cavanagh, UMass Extension

EARLY SPRING COVER CROPS

With late-harvested vegetables, fields may be left open over winter with only the decomposing crop residue protecting the ground. There is an opportunity in the early spring to sow a cover crop in these fields. Early spring cover crops can provide organic matter, and in some cases may offer some weed and disease suppression and nitrogen for the crops that follow them.

Spring Mustard

In the Northeast yellow mustard is used as a spring-planted cover crop before regular season vegetables. In some cases, it has shown good potential for suppressing soil borne diseases, including Phytophtora blight of cucurbits and peppers. It also adds organic matter, breaks up hardpan and may suppress weeds in the following crop.

Prepare a firm seed bed free of weeds to ensure a good stand. To maximize growth of biomass for biofumigation, provide additional nitrogen up to 120 lb N/ac. May benefit from sulfur application at 6:1 N:S for maximum glucosinolate production. Vegetable land often has sufficient nutrients. After seeding roll the ground to improve seed to soil contact but not to break up soil aggregates. Seed in April, or frost seed in March or early April.

Seeding Rate:

Drill 10-12 lb/ac with grass seeder.

Broadcast 10-15 lb/ac. Cover 1/2 in.

Do not let mustards go to seed. Incorporate at flowering (mid-late May). For better disease suppression, flail mow into fine pieces and incorporate immediately. Press lightly to contain biofumigant. Mustard and other plants with biofumigant activity have been found effective for Phytophthora blight through research conducted at Long Island Horticultural Research & Extension Center. Caliente 199 mustard (available from Siegers Seed) was grown during spring prior to a cucurbit crop. Fertilizer (100 lb/A N) was applied to obtain adequate growth. This variety was selected because it has a high concentration of glucosinolates, which breakdown as the plant decomposes into allyl-isothiocyanate, which is similar to methyl isothiocyanate, the active ingredient in the chemical fumigant Metam Sodium. Several weeks after the start of flowering, when plants were about 5-ft tall, they were flail chopped and immediately incorporated by rototilling, then the soil surface was sealed by rolling with a cultipacker followed by irrigation. When done early in the morning and quickly, loss of biofumigant through volatilization will be minimized.The effectiveness of this technique may be dependent on soil type and characteristics, and more research is underway to determine the best use scenarios.

Do not use in rotations with other Brassicas. If used as a biofumigant, allow it to work for 1-2 weeks before preparing to plant.

Oats & Field Peas

Field peas are used in spring plantings as a source of organic matter and nitrogen to improve overall soil health. Peas are a modest nitrogen fixer on vegetable ground, but the best choice for quick spring growth to feed a subsequent summer crop. Peas are generally seeded with a nurse crop, such as oats. The peas use the nurse crop of oats as a trellis to reduce matting.

Prepare a level seed bed free of weeds and clods. Avoid wet spots. Additional fertilizer is typically not required especially on vegetable land. Seed in March-April. Plant as early as possible with a nurse crop such as oats.

Seeding rate

140 lb/ac or

120 lb/ac plus 20 lb/ac oats

Use a pea & vetch inoculant

Mow and incorporate to improve organic matter. Wait 1- 2 weeks between incorporation and replanting to prevent nutrient tie up resulting in inhibition of the following crop. Peas are susceptible to a wide range of root-rot organisms. Avoid a close rotation with another legume crop. An option is to harvest for haylage when the nurse crop is in the boot stage, but most of the nitrogen will be removed.

Medium Red Clover

Medium red clover is a short lived perennial used to supply nitrogen. Unlike other legumes, it fixes a lot of nitrogen even in high-nitrogen soils. Since red clover seedlings tend to be slow growing it benefits from a nurse crop. It forms tap roots and is useful for remediation of compacted soils. If used late in the season it can be overseeded into small grains and incorporated in May of the following year or allowed to growth throughout the following season to build biomass, stronger roots, and fix nitrogen.

Land preparation

Medium red clover prefers cool weather conditions for establishment. This crop is well adapted a wide range of soil types and conditions. Medium red clover tolerates wet conditions better than vetch. It can be overseeded in small grains if the soil is not crusted or compacted. Overseeding in vegetable crops can be done after the crop is established, usually after a final cultivation, with no additional preparation to the land. It can be seeded between established rows or between black plastic, reducing soil compaction in well traveled areas. It provides good weed suppression once established. Mow medium red clover during the summer of the first year (this also controls escaped weeds). Control blossoms by May of the second year, incorporate when flowering. Seed April – September, can be frost seeded earlier in the spring. Red clovers support aphid predators such as ladybeetles, green lacewing larvae and hoverfly larvae, but are not particularly good as

honeybee forage.

Seeding rate:

Drill or broadcast at 10 lb/ac.

Use a clover innoculant.

For a nurse crop, mix 2/3 annual ryegrass with 1/3 medium red clover, sow 20-25 lb/ac. After seeding roll the ground to improve seed-to-soil contact but not to break up soil aggregates.

- adapted from information by Thomas Bjorkman and Meg Mcgrath, Cornell University

LATE BLIGHT UPDATE: BE PREPARED FOR 2010!

Farmers, garden retailers, and home gardeners can all help prevent the spread of late blight in gardens and on farms this growing season and provide neighbors and customers with the facts about this disease. Prevention, early detection and careful management can make this a successful growing season throughout the region!

What happened in 2009?

Late Blight caused by Phytophthora infestans – a very destructive and very infectious disease killed tomato and potato plants in gardens and on commercial farms throughout the eastern U.S. during 2009. As a result, many farmers across Massachusetts lost all or part of their tomato crops and many incurred extra fungicide and labor expenses in the effort to save their crop. While late blight occurs at some locations in the Northeast each year, the occurrence of late blight in 2009 was different compared to most seasons. In 2009 infected plants were distributed through large local retail stores throughout the region (Ohio to Maine) during June, and outbreaks were reported over this entire region by early July. Never before had such an extensive distribution of infected plants occurred, especially so early in the season. This, combined with the cool, wet growing season and the exceptionally contagious nature of the disease during cool, rainy, windy weather all contributed to a disastrous year for farmers.

How can late blight survive the winter?

The biggest threat for overwintered disease in New England is on potatoes. The fungus Phytophthora infestans needs live tissue to survive. Potato tubers that are infected with late blight and don't freeze or decay during the winter can carry the pathogen over the winter to next spring. Tubers can survive in several ways:

-Left in the ground at harvest, down several inches in the soil.

-Disposed of in a compost pile that does not fully decompose and does not freeze.

-Disposed of in a large pile of culled potatoes which does not freeze completely.

-Kept in storage until late winter, and then put outside in spring.

-Purchased for home use, and then disposed of (in compost or cull pile, as above)

Potatoes that freeze or fully decompose will not carry the pathogen overwinter.

Tomatoes will not carry late blight over the winter, because freezing kills the whole plant. Tomato seed, even from fruit that was infected with late blight, will not carry the pathogen. Thus you can use your own seed or purchase seed to start next year's crop without fear of late blight. Certain perennial weeds can become infected with late blight, but none of their aboveground tissues live through the winter. Greenhouses where tomatoes were grown could allow survival only if they never freeze and the crop lives all winter. Late blight will not survive on tomato stakes and cages.

In some parts of the world, late blight has two 'mating types' (the fungal equivalent of male and female) which can produce long-lasting 'oospores' that survive independently. So far, only one mating type has been found in the Northeast so we do not expect oospores to be present.

What to do this spring.

Tomatoes: Tomato plants started from seed locally (in the Northeast) will be free of the disease. Growing your own transplants from seed or purchasing from a reputable local grower will ensure a healthy start to the season for your custom-

ers, if you sell transplants and for your farm. Disease-resistant or tolerant varieties of tomatoes exist, however seed is in limited supply this year. 'Mountain Magic', 'Plum Regal', and 'Legend' are three varieties with resistance or tolerance to late blight. Unfortunately, the variety 'Legend' is the only late-blight resistant variety for which seed has been available this year. In addition to late blight, each year tomatoes become infected with early blight and Septoria leaf spot, which look very similar. If possible, also grow tomato plant varieties that are resistant or tolerant to early blight for your customers, such as the varieties 'Mountain Fresh', 'Mountain Supreme', 'Plum Dandy' and others.

Potatoes: Purchase certified disease-free potato seed from a reputable source, and ask your supplier about their source of seed and if it was inspected in the field for late blight. During the spring (April – June), inspect last year's potato plot and any compost or cull piles for volunteer potato plants that might come up. If you find potato plants, pull them out and put them in the trash or destroy them. If tubers were infected and survive, then the late blight could grow upward from the tuber, infecting the stem and producing spores when weather conditions are favorable. These spores could then disperse to other tomato and potato plants.

For both potatoes and tomatoes: provide good soil fertility, water drainage, air circulation, and use cultural practices to provide what the crop needs for healthy growth.

If you purchase plants to sell, inspect all transplants for stem, petiole cankers or leaf blight as long as plants are on the shelf. If you are a garden retailer or farmer, teach your staff what to look for. There are excellent web links with photos to help with diagnostics (see below). If you suspect a late blight infection, use the Plant Diagnostic Lab to confirm if late blight is present. Again, purchasing plants grown from seed in New England by a reputable local grower is the best way to ensure that you are starting the season with disease-free transplants.

During the growing season, pay attention to weather conditions and pest alerts to learn about whether late blight has been observed in New England, and what actions you need to take to protect your crop. Any light blight alerts will immediately be sent via email to Vegetable Notes subscribers and to the UMass Vegetable late blight page at www.umassvegetable.org

Web links for more information:

Cornell: http://www.hort.cornell.edu/department/Facilities/lihrec/vegpath/photos/lateblight_tomato.htm

UMass: http://www.umassvegetable.org/LateBlightAlertforTomatoandPotato.html.

- Prepared by Ruth Hazzard, Bess Dicklow and Tina Smith, UMass Extension.

ASPARAGUS BEETLES AND FROST

Frost. Asparagus, despite its status as a primo early season vegetable, is highly sensitive to frost, ranking alongside cucumber, snap beans, eggplant and tomatoes in the 'most susceptible' category. The early hot spell made some growers uneasy as spears pushed out of the ground, only to face the current string of cold nights and possibly snow. When frosted, spears appear slightly darker green, water-soaked and break off easily. Thawed spears become mushy. Soft-rotting bacteria can enter the damaged tissue. New spears take several more days to emerge. Temperatures below 33 degrees Fahrenheit may damage the spears.

Beetles. Common asparagus beetles tend to arrive in early May. The spotted asparagus beetle generally becomes active somewhat later in the spring. These two beetles are closely related and have similar life cycles but it is the common asparagus beetle that is most damaging to the cut spears.

Common asparagus beetle (Crioceris asparigi)

Common asparagus beetle (*Crioceris asparigi*) is blue-black, shiny, smooth and about 6 to 9 mm (1/4 inch) long, with three large yellow, squarish spots with red margins along each wing cover. Eggs are black, laid standing on end in rows along the spears, and hatch in 3-8 days. Larvae are wrinkled, plump, hump-backed, and dull gray with black head and legs. They grow up to 1/3 inch. These larvae feed in spears

and in ferns. Eggs and larval damage makes spears unmarketable. Larval feeding damage in the ferns can cause sever defoliation and weaken the stand. When full grown, larvae drop to the soil and pupate underground. New adults emerge in July, feed in ferns, and by September are looking for overwintering sites.

Spotted asparagus beetle (*Crioceris duodecimpunctata*) is reddish orange or tan, with six black spots on each wing cover (hence its other name, 12-spotted asparagus beetle). Eggs are greenish, glued singly on their sides to leaves. Eggs are laid on fronds, not on spears. Larvae are similar to those described above, but are orange colored, and feed almost entirely inside the berries so they affect seed production but do not hurt the plants.

Winter habitat: Both species spend the winter as adult beetles either in field borders or within the asparagus field. Sheltered sites such as under bark or in the stems of old plants are preferred. Some burrow into the soil.

Scouting: Early in the season, look for adult beetles, for feeding damage and for eggs laid on spears. Michigan State recommends a treatment threshold of 5-10% of the plants infested or 1-2% of the spears with eggs or damage.

Cultural controls: During harvest, you can greatly reduce the population by harvesting ALL of the spears every day. Pick the field clean to reduce the number of stems where eggs will survive long enough to hatch or larvae can feed and grow up into summer-generation beetles. In the fall remove all of the crop residue and other refuse nearby that may provide shelter for adults over winter, by disking lightly (avoid crown damage) or burning crop stalks and fronds. Maintaining a clean environment in the fall will force beetles to seek shelter outside the field or burrow in the soil, where many predators reside.

Biocontrol: The most important natural enemy of Common asparagus beetle is a tiny parasitic wasp (Tetrastichus asparagi) that attacks the egg stage. Wasps kill eggs by feeding on them (sucking them dry), and also lay their own eggs inside the beetle eggs. The immature wasps grow inside the beetle larvae, killing them when they pupate. Studies have found >50% of eggs killed by feeding and half of the surviving larvae parasitized. Providing a nearby nectar source such as umbelliferous flowers may enhance wasp populations.

Monitoring and chemical control: Scout fields regularly. Treat spears if >10% of the plants are infested with beetles or 2% have eggs or damage. The daily harvest makes treatment difficult; 1 dh products are available and can be used immediately after picking to allow harvest the following day (see the New England Vegetable Management Guide for current recommendations) although some growers seek to avoid applications during harvest. More selective products may be used on fronds after harvest; treat ferns if 50 to 75% are infested. Organic options on spears include Surround WP as a repellent, Pyganic EC5.0, or products containing capsaicin (check for certification status).

-R Hazzard. References: Handbook of Vegetable Pests by John Capinera; 2008-2009 New England Vegetable Management Guide; Eric Sideman, MOFGA; Brian Caldwell, Cornell Universtiy.

DEEP ZONE TILLAGE PROJECT AT UMASS

This season we are launching a deep zone tillage project (DZT) in Massachusetts. Reduced tillage (RT) systems (e.g. no-, zone-, strip) represent strategies to reduce soil degradation and erosion and protect water quality. Previous research in the Northeast has shown that zone and deep zone tillage systems can provide the environmental and economic benefits of a RT system for many vegetable crops without the harvest delays or losses observed in straight no-till. Each season, more vegetable growers express interest or try RT on their farms. In collaboration with Cornell University, we have received funds from NE-SARE to focus on evaluating RT systems for their ability to ameliorate large fluctuations in water supply, which are likely to worsen as a result of climate change. By improving soil water management, RT systems may help reduce crop losses to flooding, drought and vegetable diseases like Phytophthora capsici.

Transitioning to reduced tillage has been more challenging on smaller vegetable farms (less than 100 horsepower tractor) for several reasons. First, access to small scale deep zone tillage equipment (2-row) can be challenging since dealers do not traditionally stock these units for demonstration. Second, RT systems need to be adapted to the diverse vegetable crops and rotations that are typical of smaller farms. Third, most of the farmers that we have surveyed have P. capsici in their fields and need soil management and cultural practices that restrict the development of Phytophthora blight. These farmers are very interested in RT systems to improve both soil quality and soil drainage, since most have already observed extreme weather events that have reduced crop yields through flooding and subsequent Phytophtora blight. Growers who

have tried DZT have observed that crops grown also appear to withstand drought more successfully than conventionally tilled fields. All growers we have consulted about this project desire more opportunities to test DZT on their own farms and to learn when and where these systems will help improve soil and water management and reduce disease incidence.

As part of this project we will be running three years of on-farm trials comparing DZT to conventional tillage in split field trials, where roughly half of each field will be deep zone tilled and half will be subject to conventional tillage. In each section we will measure several properties related to the soil water dynamics, which should give us a good idea about how DZT systems will respond to both heavy rainfall and drought compared to conventional tillage. We will also take measurements of stand and yield to see if there are any differences between the systems in terms of basic productivity. These experiments will run for three years, and in one of the three years each field will be planted with a crop that is susceptible to Phytophthora capsici. In those fields we will monitor for disease and, if it occurs, track its progress in both the DZT and the conventional tillage treatments. This will allow us to compare the speed and severity with which the disease develops in DZT and conventional systems.

In addition, we are in the process of purchasing two-row DZT equipment that we will make available to growers who are interested in trying this system on their own farm and seeing how it works for them without having to make the investment in their own equipment. Look for upcoming Vegetable Notes for information on how to trial this equipment on your farm.

There has been a lot of interest lately in DZT systems, and we're excited about being able to provide access to the equipment and information necessary for growers to get some first hand experience and make informed decisions about the system. We're thankful to NE-SARE for providing the funding and to the growers who are generously donating their time and effort to support out trials. Keep tuned to Vegetable Notes for more information on the project, DZT in general, and how to get access to the demo equipment.

UPCOMING MEETINGS

Nutrient Dense Farming Training with Dan Kittredge

Sunday May 2, 9am to 4pm

Enterprise Farm, Whately, MA

Part 3, Working with Plants, of 6-part series (contact organizers if you missed earlier sessions). Principles and practices for growing nutrient dense crops will be discussed and demonstrated throughout the series. The course is based on the premise that if all of the environmental factors are ideal for the crop that is being grown, it will perform to the potential of its DNA. This series will also help farmers to network and share their experiences using these techniques in the western Mass and New England region. For more information: www.realfoodcampaign.org, davepays@gmail.com.

New Hampshire Meetings:

Small Farm Equipment Demonstration

Friday, April 30, 2010 from 1:00-4:00PMAllison's Orchard, Rt. 12, Walpole, NH.

The demonstration will feature BCS walk behind tractor, tiller and/or rotary plow or the hilling attachment. rotary plough, rear tine cultivator, flail mower, rotary brush mower, sickle bar mower and PTO chipper shredder. For more information contact Carl Majewski at 352-4550 or carl.majewski@unh.edu

Small Farm Equipment Workshop and Demonstration

Saturday, May 1, 2010 from 9:00 PM – 4:00 PM

Kingman Farm, Route 155, Madbury, NH.

Representatives from BCS-America small farm equipment manufacturers and OESCO-Inc will demonstrate walk behind tractors and different attachments suitable for your operations. Other speakers will discuss what to consider before deciding to lease or purchase farm equipment, and cooperative ownership and sharing of equipment. For more information or to receive a brochure please contact Geoffrey Njue at 749-4445 or Geoffrey.njue@unh.edu .

Vermont Meetings:

Tractors 101 Workshops

April 27, 4-7 p.m

Vermont Technical College, Randolph Center. (Registration deadline: April 21).

May 11, 4-7 p.m. Harvest Equipment, Montpelier. (Registration deadline: May 5).

New farmers will have the opportunity to learn how to use and maintain tractors safely at two workshops to be held in Randolph Center and Montpelier, Vermont. Topics covered include: tractor safety, information on purchasing new and used equipment, and hands-on time driving tractors and learning about different makes and models. Registration is required as space is limited to 10 participants per workshop. Cost is $35. To register go to http://tinyurl.com/UVMtractors101or call 223-2389 x 203, or email newfarmer@uvm.edu. Participants should come prepared for the weather, bring a bag dinner, and wear sturdy shoes, gloves, and work clothes.

Training And Initial Exam For Pesticide Applicators

April 13

Vermont Tech

If you apply pesticides, or if you want to be able to train your workers to meet the Worker protection Standards, you should have an applicator's license. See all the rules and regs about this at: http://www.vermontagriculture.com/ARMES/pest.htm. On April 13 at Vermont Tech there will be a review of Vermont pesticide regulations and the information covered in the Pesticide Applicator Training Manual that is necessary to understand and to pass the VT pesticide certification license exam. The Core exam will be given after the training, from 2-5pm. (No category exams will be given but can be scheduled with VAA for a later date.) It is necessary to study the Core manual BEFORE the training to have the knowledge necessary to pass the exam. Manuals can be purchased in advance from VT Agency of Agriculture for $33.00. Call Matt Wood at 828-3482. To register for the training contact Ann Hazelrigg at (802) 656-0493 or ann.hazelrigg@uvm.edu.

Using Beneficial Insects In High Tunnels

April 20, 10 am

IPM Specialist Dr. Betsy Lamb will lead growers in this hands-on workshop at Kilpatrick Family Farm, 9778 Route 22 in Middle Granville NY (just a few miles west of Wells, VT). The use of beneficial insects as a means to control pest insects in high tunnels and greenhouses will be discussed. Understanding placement, handling and life cycles of the beneficial insects is just as important as understanding the pest insects. Microscopes and insects will be available. Additionally, Michael Kilpatrick will give a brief tour of the high and low tunnel production areas of his farm. Cost is $10 per person; make check payable to CCE Rensselaer County, and mail with your name and contact info to CCE Washington County, 415 Lower Main Street, Hudson Falls, NY 12839. Please register by April 15th. Call 518-746-2562 or email cdb13@cornell.edu for more information.

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.