UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

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IN THIS ISSUE

CROP CONDITIONS

This week brought some higher temperatures and humidity to the state. We had a few dry sunny days, then dove back into rain and clouds. Some areas saw up to three inches of rain this week, with more in the forecast. Temperatures have yet to hit 90 degrees this season. Fields are wet. Warm season crops are still struggling to catch up. Peppers plants are growing on most days, but fruit set is poor. Some winter squash and pumpkin fields are setting fruit, but some is small with poor fruit set. Some crops are running out of nitrogen but may be too big to side dress. Late blight of potato and tomato is causing significant crop losses and prompting intensive fungicide applications. Phytopthora capsici and verticillium are beginning to show up in cucurbit, pepper and eggplant fields. Many growers are applying preventative fungicide sprays on cucurbits as well as other crops. Since many early succession crops now carry a population of insects or diseases, plant fall crops as far away as possible.

Sweet corn growers were finally able to fill orders this week as harvest of bareground corn began. The first significant corn earworm flight has been captured in eastern parts of the state this week and the second flight of the European corn borer has begun. Sales are steady at farm stands and farmers markets, and corn is selling anywhere from 4-6 dollars a dozen. Despite all the cool wet weather, beets, cabbage, lettuce, beans, broccoli and cucumbers are all growing and selling well. Garlic is harvested and drying. Local blueberries and raspberries are also available and selling well.

LATE BLIGHT OF POTATO AND TOMATO UPDATE JULY 23, 2009

Late blight ***(Phytophthora infestans)*** continues to be found and reported in additional potato and tomato fields across the state. Berskshire, Frankin, Hampshire, Hampden, Middlesex, Norfolk, Bristol and Barnstable counties have confirmed cases. For regular updates see www.umassvegetable.org and visit the late blight alert page.

To confirm a diagnosis, please contact the UMass Plant Problem Lab online, or at (413) 545-3209.

A regular fungicide schedule is critical to survival of these crops this year. Where fungicides were started early and applied often, usually more than once a week and between rainstorms, the crops seem to be holding on. This seems to be true of organic farms using copper sulfate as well as those using the more effective conventional products. However, extended intervals between sprays or no sprays at all seem to put the crop at great risk given the combination of widespread, increasing inoculum and highly conducive weather.

Growers throughout New England should assume that their fields are at high risk of the disease. Do not wait until you see it! Farmers should be on a 5 day schedule with a combination of a protectant and a systemic fungicides. The good news (so far) is that an intensive fungicide program with the appropriate materials seems to be holding back the disease on many farms.

Commercial growers should be on fungicide program that includes both protectants and systemics. Using only a protectant is less effective. Systemics have translaminar or curative ('kickback') properties which helps with efficacy. However the pathogen can develop resistance rapidly so don't rotate at least two different systemic products. Mix with protectants to help prevent resistance, such as chlorothalonil or mancozeb/manzate. Systemic/curative products include Curzate, Ranman, Presidio, Previcur Flex, Gavel, and Tanos.

Organic growers should apply copper products, which are protectant fungicides with limited efficacy against late

blight-- but better than doing nothing. Champ WG and NuCop 50 W are registered in MA and are OMRI listed. Use a tight spray schedule (five day intervals) and re-apply after a heavy rain. See article on organic potato production.

Tomatoes. In tomatoes, it is typically the first planting that shows symptoms earliest. Most growers have succession plantings. If an early planting is lost, concentrate on saving the middle and later plantings. Good coverage is important (See potato article for suppliers of small-scale sprayers.)

Get rid of any planting that can't be saved. In staked tomatoes, removed the stakes and pull out the strings. Mow with a rotary or flail mower above the plastic, leaving only the stubs. Mowing is the quickest way to kill these thick vines and get them to break down. The good news is that this plastic can be used for a different late season crop. If you can do this on a sunny day, spores will disperse less and die more quickly.

Disposing of an infected block of painstakingly staked and tied tomatoes on plastic is a heartbreaking and hard job. But it is the best choice for you, your other crops, and your neighbors. Destroying the living vines means that the source of spores and the spores themselves will die.

Removal of a few infected plants may slow the disease, but has not been successful in saving a crop thus far. If removed, bury the infected plants completely, or bag and remove from the farm. An intensive fungicide schedule is the best option.

Potato. Vinekilling has traditionally been used to set the skins and condition the tubers for better longterm storage. If potatoes are harvested at this time of year they will not be stored long term. However,vine kill is key for reducing infection of tubers. Two products labeled for vine kill in potato are

glufosinate-ammonium (Rely): 3 pt/A (9 dh, REI 12h). NOT for seed. This is the same active ingredient as Liberty herbicide. Rainfast in four hours. Minimum spray volume of 20 gal/A. Acts as a contact, burndown herbicide similar to paraquat, but with a toxicity profile more like Round-up – that is, safer for the handler to use.

diquat (Reglone): 1 to 2 pt/A (7 dh, REI 12h). Suitable for seed and storage. Always use a spray adjuvant (0.1 to 0.5% v/v NIS). Rainfast in 30 minutes. A second application may be made depending on density of vine growth. A five-day interval is recommended between applications and not more than 4 pt/A may be applied in one season. Minimum spray volume of 20 gal/A. **endothall (Desicate II):** is no longer manufactured.

NOTE: paraquat (Gramoxone) is no longer registered as a vine dessicant.

--R Hazzard, Rich Bonanno, Amanda Brown

MANAGING LATE BLIGHT IN ORGANICALLY PRODUCED POTATO

Late blight is a potentially very destructive disease that fortunately occurs very sporadically in most areas of the northeastern US most growing seasons. It can destroy a crop if unmanaged. The pathogen is well named: 'Phytophthora' in Latin means 'plant destroyer'. Affected foliage tissue is quickly killed. Impact is especially great when stems are infected because all tissue above this point will die. This disease can be explosive especially under favorable conditions because the pathogen can produce a lot of wind-dispersed spores and it can cycle very quickly. With some strains of the pathogen under ideal conditions it takes less than 3 days to go from spore landing on a leaf to visible spot, and just one more day until spores are being produced on the spot! Others take a little longer but still can progress from infection to spore production in 6 to 7 days. Many images of symptoms are available on the internet to assist with identification. Meg McGrath's images are posted at: www.hort.cornell.edu/department/Facilities/lihrec/vegpath/photos/lateblight_potato.htm

Steps for managing late blight in organically produced potato:

(Note: these apply as well to conventionally managed potato, with the addition of a much expanded list of fungicide options, and chemical vine kill).

Use certified seed. Inspect them to ensure none have symptoms of tuber blight. Infected tubers used as seed or not destroyed from the previous crop are considered the primary source of initial inoculum for late blight in the northeast.

Regularly inspect potato as well as tomato crops, which are also susceptible, for symptoms of late blight. Use the Extension diagnostic service.

Read local extension newsletters each week for information about late blight occurrence. Note that during cloudy conditions spores of the late blight pathogen can survive being dispersed in wind currents long distances (miles!) because they are protected from the killing effects of UV radiation. Rain can bring these spores down on to plants far from the affected plants that were their source.

Spray preventatively and regularly. When there is a risk of late blight occurring and fungicide applications are going to be used as a component of management, apply approved copper fungicides on a regular preventive schedule. Preventative means begin when risk is present – DO NOT wait until symptoms are found in the field. Check with local organic certifying agency to determine what products are approved. In Massachusetts, two OMRI listed products available are Nucop 50W and Champ WG which are labeled for both potato and tomato. Permitted spray intervals differ between products. Champ WG states 'begin as disease first threatens and repeat at 5-10 day interval or as needed depending on disease severity.' NuCop 50W states for tomato 'apply at 7 to 10 day intervals' and 'use more frequent application when disease pressure is high'.

Fungicides are needed. Given our observations and conversations with growers this week, our knowledge of the widespread inoculum in the region, and the continuing wet weather, we are ready to state the following: late blight is nearly certain to destroy you tomato and potato crop unless a regular copper fungicide schedule is maintained. Cultural practices alone will not control this disease.

Copper sprays are better than no sprays. There is limited data from replicated experiments on efficacy for late blight of products approved for organic production. Copper has provided some control where other products have failed. However, copper is not considered very effective because it has provided poor control in efficacy experiments where excellent control was achieved with conventional fungicides. Poor efficacy, combined with the fact that established spots, being uncontrollable with copper, will continue to produce spores, plus the explosive nature of late blight, is why a preventive spray program is recommended including by organic growers in areas where late blight occurs regularly.

Read and follow the label. Before using any fungicides read the label. Note that the 'signal word' for copper fungicides is 'danger'. The signal word assigned to a pesticide is based on how harmful it might be if swallowed, inhaled, or exposed to skin or eyes of the person handling it. Danger is assigned when the pesticide is highly hazardous by at least one of these routes of entry into a person. The other signal words used for pesticides are 'warning' for moderately hazardous chemicals and 'caution' for slightly hazardous chemicals. In the precautionary statement on pesticide labels is a section on 'hazards to humans', which explains how the product could affect someone exposed to it. This is followed by the 'personal protective equipment' (PPE) that is needed when mixing and applying the pesticide. Hazards for copper fungicides are: "Corrosive. Causes irreversible eye damage. May cause skin sensitization reactions in certain individuals. Do not get in eyes or on clothing. Harmful if swallowed or absorbed through the skin. Avoid contact with skin.' Also 'avoid breathing dust.' for some formulations. PPE that applicators and other handlers must wear when using copper is: long-sleeved shirt and long pants, chemical-resistant and waterproof gloves, shoes plus socks, and protective eyewear. First aid information is also provided on labels for accidental exposure; know this in advance to avoid delay in treatment. There are also important 'Agricultural Use Requirements' described on labels. This includes the 'restricted-entry interval' (REI), which is 24 hours for copper, what PPE is required for anyone who enters and will contact anything treated before the end of this interval, which for copper is the same as for applicators, and what precautions must be followed after an application, which for copper includes having an eye flush container at the WPS decontamination site for workers entering the field for 7 days after treatment. EPA's Worker Protection Standard for Agricultural Pesticides (WPS) is a regulation that must be complied with on farms where any pesticide is used, including those approved for organic production. Under this regulation, all agricultural workers on the farm must receive pesticide safety training, decontamination supplies, notification of pesticide applications, access in a central location to a log of pesticide applications plus information about these pesticides, any required personal protective equipment, and emergency medical assistance when needed. Restricted-entry intervals must be adhered to. Also, pesticide safety posters must be displayed.

When using any pesticide note that it is a violation of Federal law to use the product in a manner inconsistent with its labeling.

Use an effective sprayer. Make sure your sprayer is up for the task at hand. A tractor-drawn boom sprayer or airblast sprayer is the best choice for getting adequate coverage and penetration of the canopy. Small scale sprayers can be obtained or custom designed that fit to a small tractor, 4 wheeler, or backback. Backpack sprayers can be mounted with a small boom with two or more nozzles for good coverage of a wider horizontal or vertical canopy. Suppliers include OESCO, Inc (413) 369-4335 in Conway,MA; A. M. Leonard (800-543-8955) in Ohio, and Gemplers (800-382-8473).

Removal of plants. If symptoms of late blight are found in isolated areas in a planting, promptly pull up affected plants and cover them in place with a tarp or dig a hole and bury them. Heat that develops from sunlight hitting the tarp will quicken death of plant tissue and the pathogen. It is best to pull plants in the middle of a sunny day after the leaves have dried when there will be fewer spores and those dislodged in the process will likely be exposed to UV radiation. Inspect

plants daily thereafter for a week in order to find any additional affected plants that develop symptoms. Apply copper fungicides at intervals indicated on the label until vine kill. It is not possible to control late blight by solely relying on removing affected tissue. Even when rain is not occurring, dew over night can provide a sufficient leaf wetness period for infection. Especially when conditions are favorable it may not be possible to control late blight with copper. Monitor disease development and be prepared to terminate the crop if disease becomes severe.

Field work in infected fields. Do not hill potatoes that remain in the field in an effort to protect the tubers because the pathogen can be easily spread on equipment, and the root pruning that will occur may stop plant growth for several days. Work in affected fields last. **Clean equipment between fields.**

Kill the crop if it can't be saved. When late blight starts to become severe, the foliage must be destroyed to protect the tubers from infection and to eliminate the planting being a source of spores for other tomato or potato plantings on the farm or other farms. It is especially important to vine kill when late blight is developing on stems because from this location spores can more easily be washed down to tubers than from leaves. Destroy foliage in the middle of a sunny, preferably calm day after the leaves have dried to minimize the quantity of spores and also their likelihood of survival in the process. Propane flamers are a good way to quickly kill foliage. Flail chopping is another option. Chop as thoroughly as possible.

Applying copper fungicide to protect stems that remain from late blight is not recommended because conditions are much less likely to be favorable for infection once all the foliage is removed.

Harvesting tubers. Tubers in an area where disease is present could be dug. They should be held in a dark, dry, warm (at least 65F) place for a week, then inspected for symptoms of tuber blight before marketing.

If a crop has been lost to late blight and killed, wait to harvest tubers after foliage has died. If possible, harvest before significant rainfall is predicted to avoid this opportunity for spores to be washed down to tubers. Two weeks is recommended in some texts, to allow time for spores to die before tubers are harvested. A small amount of foliar blight can cause significant tuber decay in storage. Infection is more likely to occur when soil temperatures are cool (below 54F). Avoid harvesting when tubers are wet, or if they are wet ensure good ventilation to remove moisture as rapidly as possible. Tubers from an affected field should not be marketed until checked for blight as described above.

Destroy any affected tubers. This is how the pathogen survives over winter. Recommended methods include chopping, burial, burning, spreading on fields where they will freeze completely over winter, or feeding to livestock.

Next year. Promptly destroy any volunteer potatoes in subsequent years. These can be a source of the late blight pathogen.

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CUCURBIT DISEASE UPDATE

Downy Mildew:

The NCSU downy mildew forecast reports that downy mildew has been reported in Virginia, North Carolina and Ontario – but nowhere closer, to date. Although storm fronts are moving into New England from the west and south this weekend, the downy mildew forecast indicates that this New England remains at low risk for this disease. This forecast website is updated three times a week, and can be found easily by searching 'downy mildew forecast'

Powdery Mildew:

We have not yet seen powdery mildew in summer squash and pumpkin crops. Conditions are ripe for the development of this disease. (You will find it first in early zucchini and yellow squash). Many of the fungicides recommended for powdery mildew will also be effective against plectosporium and black rot, consult the NE Vegetable Management Guide for details.

Angular and Bacterial Leaf Spot:

The wet weather has caused an outbreak of these diseases in some areas. Often the plants will grow out of angular leaf spot, but if it continues to develop copper applications may be needed. While these diseases are generally not major prob-

lems in cucurbit foliage, bacterial leaf spot can affect the fruit. Applications of copper compounds during early fruit set can reduce the risk to fruit in some vine crops.

Phytophthora capsici:

Although we had some drier weather in early July, the return of heavy rain this week produced saturated soils and standing water (again) in many parts of the state. As temperature rise (not as high as usual for July, but higher than in June) conditions are more suitable for the development of this disease. We've seen Phytophthora blight in a few places already this summer. Scout fields, especially lower areas, for symptoms. The most effective technique for this disease is to manage standing water in the field. Anything you can do to reduce ponding and pooling of rain or irrigation water will help to reduce the spread. Removing infected material, along with a border of healthy-looking plants, may slow its spread. Be careful of moving soil from infected fields to healthy fields on boots or equipment. Use of fungicides that target this disease can be helpful when combined with water management. See June 18 issue of Vegetable Notes for specifics on fungicides for *P. capsici*.

Plectosporium has not been reported to date, but conditions are favorable.

Given current conditions, preventative fungicides with broad-spectrum activity are recommended in fields not prone to *Phytophthora capsici*. Where *P capsici* is a likely risk, include products that are specific for this disease.

ALTERNARIA DISEASES OF BRASSICAS

Alternaria diseases of Brassicas are favored by the wet weather that we had all through June and are continuing to have in July. These diseases can threaten the marketability of both leafy greens and heading crops. Most growers are familiar with *Alternaria solani*, early blight of tomato and potato, but might be less familiar with the species that infect Brassicas.

Three Alternaria species cause serious damage to brassicas: *Alternaria brassicicola, A. brassicae, and A. raphani. Alternaria brassicicola and A. brassicae* infect broccoli, Brussels sprouts, cabbage, cauliflower, Chinese cabbage, kohlrabi, kale, rutabaga, and turnip. *A. raphani* is most often found on radish, but can infect other brassica crops.

The most common symptom of Alternaria diseases is yellow, dark brown to black circular leaf spots with target like, concentric rings. Lesion centers may fall out, giving the leaf spots a shot-hole appearance. Individual spots coalesce into large necrotic areas and leaf drop can occur. Lesions can occur on petioles, stems, flowers, flower pedicels, and seed pods. Pod infection causes distortion, premature shattering, and shriveled, diseased seed that germinate poorly.

Alternaria on Brassicas

Alternaria species are simple parasites that overwinter primarily in diseased crop debris. Long-lasting resting or overwintering spores have been reported but are not widely found. The disease is favored by temperatures of 60-78° F and 12 hours of relative humidity of 90 % or more. The main means of introduction into new areas is on infested seed. However, spread from one infected crop into nearby crops occurs easily once the disease is established on a farm. The fungi sporulate profusely and are spread throughout fields by wind, splashing water, equipment, and workers.

Management:

Buy certified, disease-free seed or treat seed with hot water.

Keep seedbeds disease-free to prevent the spread of disease and locate seedbeds so as to avoid wind-borne inoculum.

Practice long rotations with non-Brassica crops.

Practice in-season rotation: avoid planting succession crops in close proximity; rotate late season crops to new fields.

Control brassica weeds.

Avoid overhead irrigation during head development.

Control of Alternaria leaf spot on cabbage heads in the field is necessary for long-term storage.

Work in young, uninfected plantings first, and older, infected plantings last

Incorporate diseased plant debris into the soil immediately after harvest. Once plant residue has decayed, Alternaria is unlikely to persist in the soil.

Eliminate piles of culled crops and plants; manage compost piles to heat up well during decomposition.

Chemical recommendations:

azoxystrobin(Quadris): 6.0 to 15.5 fl oz/A (0 dh, REI 4 h, Group 11). Apply preventively or at the first sign of disease. Do not use more than once per season; do not rotate with other strobilurins. See label for list of allowed Brassica crops.

chlorothalonil (Bravo Weather Stik): 1.5 pt/A (7 dh, REI 12h, Group M5). Apply at the first sign of disease; repeat at 7- to 10-day intervals.

maneb (Maneb, Manex): Rates vary depending on the formulation. Apply at the first sign of disease; repeat at 7- to 10-day intervals.

CERCOSPORA LEAF SPOT OF SWISS CHARD, BEETS AND SPINACH

This disease caused by Cercospora beticola occurs wherever table beets, Swiss Chard, sugar beet, and spinach are grown and is one of the most important diseases affecting the Chenopodium group. It can result in significant losses, particularly in late summer when conditions are favorable (high temperatures, high humidity, long leaf wetness periods at night). Leafy greens become unmarketable, and beet roots fail to grow to full size when disease is severe.

Identification. Symptoms occur as numerous, initially small circular leaf spots (see photo). Spots have a pale brown to off-white center with a red margin. Lesions expand in size, coalesce, turn gray as the fungus sporulates, and can result in extensive loss of foliage. Leaves at the center of the plant are often less severely affected. The pathogen produces sclerotia or stromata which can be seen with a hand lens as small, black dots in the center of lesions. Lesions may also occur on petioles, flower bracts, seed pods, and seeds. Leaf symptoms are similar to those caused by Beet Phoma (Phoma betae), except that the phoma will have more obvious tiny fruiting bodies in the lesions and can also affect the roots.

Source and survival. C. beticola survives between crop cycles in residues from infected crops (as sclerotia), in weed hosts, and on seed. It can in the soil for up to two years. High levels of disease can result from just a few infected plants, since each lesion produces numerous conidia. Several cycles of infection and conidium production may occur with favorable environmental conditions. Spores can penetrate the leaf directly through open stomates. The pathogen is favored by high relative humidity and temperatures between 75-85˚ F and is spread by rain splash, wind, irrigation water, insects, workers, and equipment. Leaf wetness during the night, even with dry conditions during the day, encourages disease. Successive plantings made close together can allow disease to move from one planting into the next.

Cercospora Leaf Spot on Swiss Chard and Beet

Cultural management. Bury infected crop residues and destroy volunteer plants and weed hosts. Start with certified, disease-free seed or treat seed with hot water or fungicides. Rotate to non-host crops (not in the Chenopodium family) for 2-3 years. Do not cut chard or spinach for regrowth if disease is present. Avoid planting succession crops close together. Avoid overhead irrigation if it will result in prolonged leaf wetness periods (eg, through the night); irrigate mid-day when leaves will dry fully or use drip irrigation.

Chemical controls. Apply registered fungicides according to label instructions prior to infection and symptom development. Pathogen populations resistant to sterol demethylation-inhibiting (DMI's, FRAC Group 3) fungicides have been reported, so products with other modes of action should be used.

Registered fungicides for leafy vegetables include:

-Strobilurins (Group 11): azoxystrobin (Quadris), trifloxystrobin (Gem, Flint), pyraclostrobin (Cabrio). Alternate with a

fungicide with a different mode of action after one application.

-Chlorothalonil (Bravo and generic products)

-Mancozeb (Dithane, etc.)

-Basic copper sulfate (NuCop 50W OMRI listed, Champ WG OMRI listed, Basic Copper 50W HB)

-Group 3: tebuconazole (Folicur 3.6 F), propiconazole (Tilt)

For an up-to-date list of registered products consult the online New England Vegetable Management Guide, www.nevegetable.org

--by Bess Dicklow, Rob Wick and Ruth Hazzard, UMass Plant Soil and Insect Science Dept.

SWEET CORN AND PEPPER REPORT

European corn borer second generation is showing up in a few locations throughout the state. The first few moths were caught in traps this week, but overall numbers remain low. Continue monitoring your traps on a weekly basis and scout tassels for borer damage as the trap counts increase. When fields are 15% infested or over you know it is time to spray. In silking corn, 5 ECB moths per night indicate that a spray is needed. Only spray corn that is not being harvested within the week.

Location	Z1	EII	Total ECB	AVG CEW
CT Valley				
South Deerfield	2	2	4	-
Deerfield	0	0	0	1
Sunderland	0	2	2	3
Hadley (1)	1	3	4	0.75
Hadley (2)	0	0	0	1
Granby	0	0	0	1
Easthampton	0	0	0	0
Central & Eastern MA				
Lancaster	0	0	0	0
Tyngsboro	1	0	1	0
Concord	0	0	0	1
Northbridge	0	0	0	14
Leicester	0	0	0	8
Dracut	7	0	7	8
Rehobeth	0	1	1	11
NH				
Litchfield, NH	0	0	0	5
Hollis, NH	0	0	0	6
Mason, NH	0	0	0	1

Corn earworm arrived to eastern Massachusetts early this week and has been slowly migrating to the central and western parts of the state over the last two days. The trap count chart shows the typical path of the corn earworm flight. Areas east of and including Worcester County began catching high trap captures after a southern storm hit the state early this week. More storms from the south are in the forecast for the weekend so remember to check your traps. If you are catching more than 2 moths per week, a 6-7 day spray schedule is recommended (see table below). Because CEW lay their eggs directly on the silk, eggs are difficult to find in the field unless the population is VERY high. We rely on pheromone trap catches rather than scouting to make CEW management decisions. Drop nozzles with high pressure directed at the silks are good for accurate coverage. Conventional materials such as Warrior will work well in heavily infested areas. Spintor is less toxic and can be used in fields with low to moderate infestations. Entrust is recommended for organic growers and the use of the zea-later. For more information on using the zea-later for CEW control visit our web site, www.umassvegetable.org. Check traps twice a week to catch an infestation before it catches you!

Peppers

Pepper plants are growing slowly and fruit set is poor in many fields. Keep an eye out on fields with a history of *p.capcisi* as conditions continue to be favorable for disease development. Suspect plants should be brought to the UMass diagnostics lab as soon as symptoms occur.

European corn borer traps should be up in pepper fields by now. This week growers are releasing *trichogramma ostrinea* in fields as the start of the second generation begins. Rates for *t. ostrinea* in peppers are 120 thousand wasps per acre as compared to the sweet corn release rate of 30 thousand per acre. The higher release rate reflects the need to control ECB before hatch occurs in pepper fields. Once hatch occurs caterpillars will start feeding and can burrow into the peppers. Once inside the fruit, caterpillars can not be controlled with pesticides. The severity of ECB in peppers varies in MA and

around New England. Some farms – typically in areas where farming is less dense and ECB populations have not built up – do not see much damage from this pest. In the Connecticut Valley and in Southeastern MA, an unsprayed pepper field is likely to have anywhere from 10 to 100% of the fruit infested. In some cases, it seems that sweet corn– which ECB prefer over peppers – helps to draw ECB away; in other cases, presence of sweet corn near peppers provides no benefit at all. Use flight counts and historical experience to help you decide which applies to you. Getting good ECB control is especially critical when you want to sell ripe, colored peppers.

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

RECAP OF THE UMASS FIELD DAY AT THE UMASS CROPS RESEARCH AND EDUCATION FARM

Last Thursday the UMass research farm held its annual field day showcasing some of the research that is currently being done by Extension staff, faculty within the department of Plant Soil and Insect Science and others. This focus of the field day was on new cash crops including food, feed and fuel. Over 100 people attended to see tours of the latest research on vegetable, grain and energy crops, demonstrations of Deep Zone Tillage equipment, and to enjoy some locally grown food including a few Brazilian dishes. Those in attendance saw plenty that's new: new facility, new fields in use, new research directions, and new vision for the UMass Crops Research and Education Farm.

Descriptions of what was featured are available at www.umassvegetable.org. Thanks to all who made this year's event a huge success!

Frank Mangan and UMass graduate students discuss Maxixe, Tioba, Chiplin production and marketing

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