UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

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In this issue:

UMass Extension Educator Rich Bonanno demonstrates backpack sprayer calibration and use at a workshop held at Powisett Farm on Wednesday.

Crop conditions

It's been a long, cool spring, but we continue to march determinedly towards summer. Plants put on a lot of new growth this week and even summer crop transplants like tomatoes and peppers that, for a while looked a little unsure about life outside of a greenhouse, finally look like they're settling in. Temperatures poked into the low 90s in some places this past week, and despite overcast skies, frequent drizzles, and the occasional downpour, it was still possible to find yourself with a sunburn. Many CSAs and farm stands opened last weekend with lettuce, spinach, and salad greens, spring turnips, radishes, baby beets and beet greens, scallions and perhaps even some early strawberries. Covers are being taken off of the first summer squash and zucchini plantings, which are beginning to flower, and plastic is being removed from early corn. The rain and relatively low temperatures might be helping to hold back pests like potato leafhopper and onion thrips, which thrive in hot, dry weather, but crops might have a hard time fending off diseases if the cool, moist weather holds. Strawberries are just coming in, and a cool and wet environment favors development of Botrytis and other diseases in this precious crop. It may also be difficult to control humidity and disease in greenhouses and high tunnels, where transplants are still waiting to go out into the field, and the first red tomatoes are being harvested. Summer is coming. Someone tell the sun.

Pest alerts

European Corn Borer: ECB moths continue to be captured in pheromone traps around MA and egg laying has likely begun in many locations. Eggs take 5-7 days to hatch. If moths are being captured in your area or you have reached 375 GDD at base 50 F and you are using *Trichogramma ostriniae* wasps in sweet corn, you should be making your first release if you have not done so already (see next page for ECB data tables).

Potato Leafhopper: Have been observed in potatoes in western MA, but were not seen in other parts of MA, and RI, or VT by our scouts. Leafhoppers are expected soon, so be on the lookout in potatoes, beans, and raspberries. Threshold: 1 adult per sweep or 15 nymphs per 50 leaves in potato, or 1.5 adults or nymphs per leaf in eggplant. See article this issue for more details.

Colorado Potato Beetle: Small larvae have been seen in Burlington, VT, Saunderstown, RI, eastern and western MA but populations were below threshold at all locations. That said, lots of egg masses have been seen and CPB populations are expected to grow rapidly. The threshold per plant if < 12" tall and per stalk if >12" tall = 0.5 adult, 4 small larvae, or 1.5 large larvae.

Cabbage aphid: Usually a fall pest, this aphid was seen in western MA Brussels sprouts planted out into the field from a greenhouse that had overwintered brassicas. If the pressure is high, aphids could continue to build up even in the field.

Cercospora leaf spot: Temperature and humidity have been ideal for infection of beets and Swiss chard and the disease has been reported in western MA. Planting later successions up-wind of earlier succession can prevent build-up of

this disease over the season. See article this issue for more details.

Imported Cabbageworm: Feeding damage caused by this pest was seen in broccoli, cabbage and kale in Burlington, VT, in Saunderstown, RI, and in western MA. Spring populations rarely reach thresholds requiring insecticide applications, however, scout your crops regularly as they enter the cupping stage, as damage can be severe in heading crops (see image). Treatment may be required at the following thresholds: before heading, 35% infested; heading, 20% infested; leafy greens, 15% infested.

Eggplant transplants can be particularly susceptible to leaf hopper, flea beetle, and Colorado potato beetle damage. Row cover before bloom can be an effective control option. Check the New England Vegetable Management Guide for thresholds and treatment options.

Onion thrips have been seen on onions in eastern and western MA. Populations may be kept lower by cool, wet weather, but will increase quickly if weather heats up. Scout fields often and treat if levels reach threshold of 1-3 thrips per leaf.

Botrytis and Fulvia leaf mold have been seen in greenhouses in Worcester County, MA. Keep relative humidity below 85%, remove lower leaves below first fruit cluster, and sucker plants to increase airflow. Keep air circulating. Roll up sides and turn on heat to drive moist air out if needed.

Tomato hornworm moths (also known as the hummingbird or hawk moth) were observed flying and eggs were seen in a greenhouse in Southern RI. Watch for egg hatch as this pest can build up and be a major problem, especially in enclosed situations such as greenhouses.

Late blight: Cool, wet conditions over the past week have been very favorable for disease development. Rain events can also cause fungicide residues to be removed more quickly, so NEWA's late blight decision support system indicates a protective spray is warranted and the recommended spray interval for susceptible cultivars of potato and tomato is 5-10 days depending on location. To get spray recommendations for your location, check out the all-new MA Late Blight DSS website, and see the article in this issue for more details on how to use this new resource!

No outbreaks have been reported outside of Florida, but susceptible potato and tomato plants should be considered at risk if the pathogen is present. Early infections could arise from infected, overwintered tubers left in the field or in cull piles, or from infected seed tubers. Susceptible crops should be scouted regularly and disease occurrence should be reported. Check usablight.org to monitor disease outbreaks across the country.

Location	Total ECB reported*
CT River Valley, MA	
South Deerfield	25
Sunderland	27
Amherst	5
Central & Eastern MA	
Sharon	3†
Seekonk	5†
Rehoboth	0
NH	
Litchfield	71
Hollis	10
Mason	24
Saunderstown, RI	na
Burlington, VT	na

* Combined captures from 2 traps, one for each strain IA (Z1) and NY (E2)
† Data from one trap only

Accumulated Growing Degree Days, base 50°F (10°C): 1/1/14 – 6/12/14

Location	GDD
Pittsfield	381.2
Ashfield	388.5
S. Deerfield	485.3
Belchertown	488.7
Harvard	473.4
Dracut	478.5
Boston	495.1
East Bridgewater	456.8
Sharon	479.7
Seekonk	497.7
Barnstable	393.9

Onion thrips

Onion thrips (*Thrips tabaci*) are being observed in onions across New England and although numbers are generally low, this is a good time begin regular scouting for this pest. Hot and dry conditions favor rapid buildup of this pest, thus an end to our generally cool weather could allow numbers to build to damaging levels. This is the most important insect pest of onions, and onions are their preferred host crop.

The host range of onion thrips is wide, including many vegetable families, field crops such as alfalfa, wheat, oat and tobacco, weeds including amaranth, goldenrod, ragweed and sunflower, and ornamentals such as roses. Cabbage may be infested at any time in the season, but the most common thrips damage in brassicas in New England occurs later in the season on fall transplants. Succulent peas are sensitive to thrips feeding damage, and onion thrips can also cause damage in greenhouse tomato and cucumber.

Identification and life cycle. Onion thrips are tiny, slender insects that range in color from translucent to yellow to brown and are only 1/16" in length. They spend the winter as adults in crop remnants, alfalfa, wheat, greenhouses and weeds along the border of crop fields. Early spring reproduction can occurs in field crops, especially wheat, before movement into onion. Adults insert eggs singly into plant tissue, adults and nymphs feed on leaves, and pupation occurs in the soil near the plant. Development time (base temperature of 52.7 degrees F) is 140 GDD for egg, 180 GDD for larva (2 instars), and a total of 323 GDD for each generation. At summer temperatures, a generation can be completed in 2-3 weeks. Thrips have rasping mouth parts which they use to tear open plant cells to feed on plant juices.

Closeup of onion thrips. Photo by Alton N. Sparks, Jr., University of Georgia, Bugwood.org

Damage. In onions, damage is caused by adults and nymphs piercing cells and removing cell contents along leaf blades. Symptoms are irregular, blotchy whitening of the leaves (known as 'blast'), and, with heavy feeding, leaf curling or twisting and overall stunting of plant growth. The result is reduced bulb size and lower overall yields, or if severe enough, plant death. Feeding that occurs during bulb formation and rapid bulb expansion has the most effect on yield. Scallions are particularly sensitive because the whole plant is marketed. In addition to direct injury, thrips damage can increase occurrence of purple blotch (*Alternaria porri*) of onions, as this fungus can penetrate the plant through wounds caused by feeding. Thrips also vector the virus that produces iris yellow spot.

During the day, thrips adults and nymphs can be found at the interior of leaf bases where it is cool and moist.

Monitoring. Scout plants along field margins where infestations build early, as well as checking across the field. Scout weekly to determine if populations are increasing. Look closely between the leaf blades to find the light yellow nymphs or darker adults. Though tiny, they are visible moving about on the leaf when the leaves are parted. Count number per plant and note number of leaves per plant to determine if thresholds are reached. The number that constitutes an economic threshold varies with the stage of plant growth, efficacy of insecticide to be used, water availability, and health of the plants. A widely used threshold is 1-3 thrips per leaf or 30 per plant.

Cultural practices can reduce thrips numbers by delaying or inhibiting their establishment in the crop, or by reducing survival. These include:

-Incorporate or remove crop residue at the end of the season.

-Rotate into fields where no alliums or brassicas were grown for the past 2 years.

- Avoid planting onions or cabbage near alfalfa, wheat or clover; thrips may migrate to onions when these crops reach maturity or are cut and harvested.

- Avoid importing plants or sets from other farms or regions, or using last year's onions for sets.

- Maintain sanitation and scout regularly in the greenhouse to avoid thrips on transplants.

- Use straw mulch, which has been shown to slow population buildup.

-Alternate onion rows with carrot rows, which has been shown to reduce thrips in onion

-Use reflective plastic mulch.

-Provide adequate water for onion growth: onions need consistent, adequate moisture, and dry soil conditions worsen the effects of feeding damage.

- Heavy rain or overhead irrigation can lower populations (but may increase risk of foliar disease).

- Use selective insecticides to conserve minute pirate and insidious flower bugs, which are the most effective predators, as well as other natural enemies.

Insecticides. If repeat applications are needed, use a 7 to 10 day spray interval. Rotate between insecticide groups after 2 applications to help prevent resistance. Use a shorter interval in hot weather. Wetting agents or spreader-stickers are strongly recommended to improve coverage and control. Apply in early evening, using moderate to high pressure, 100 gal water/A, and appropriate nozzle spacing to achieve best possible control. Note that products labeled for thrips control are not exactly the same for onions and Brassicas.

Conventional: neonicotinoids eg. Assail, Admire Pro (Group 4A); pyrethroids eg. Ammo 2.5EC, Delta Gold 1.5EC, Proaxis, Warrior, Mustang, and generic equivalents (Group 3A); spinosyn eg. Radiant (Group 5); carbamates eg. Lannate (Group 1A).

OMRI listed/organic: Chromobacterium subtsugae eg. Grandevo; kaolin clay eg. Surround WP, pyrethrin eg. Pyganic 5.0 EC; petroleum oil eg. Suffoil X; spinosyn eg. Entrust SC (Group 5).

For detailed information on current chemical control recommendations, please see the 2014-2015 New England Vegetable Management Guide.

--Written by Ruth Hazzard, UMass Extension

CERCOSPORA LEAF SPOT OF SWISS CHARD, BEETS AND SPINACH

Cercospora lesions on beet foliage.

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, and long leaf wetness periods at night) and inoculum builds up. Leafy greens become unmarketable, and beet roots fail to grow to full size when disease is severe.

Identification. Initial symptoms occur as numerous, small, circular leaf spots with a pale brown to off-white center and a purple-red margin. Lesions expand in size, coalesce, and turn gray as the fungus sporulates, and can result in extensive loss of foliage. Younger 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 Phoma leaf spot (*Phoma betae*), except that 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 stromata), in weed hosts, and on seed. It can survive 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 spores. Several cycles of infection and spore 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 plantingsclose to each other can allow disease to move from one planting into the next.

Cultural management. Bury infected crop residues and destroy volunteer plants and weed hosts such as *Chenopodium album*, *Amaranthus retroflexus*, *Malva rotundifolia*, *Plantago major*, *Arctium lappa* and *Lactuca sativa*. 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. Avoid planting succession crops close together. Overhead irrigation will result in prolonged leaf wetness periods (eg, through the night) so irrigate during mid-day when leaves will dry fully or use drip irrigation.

Chemical controls. For optimum results use protectant fungicides as a preventive treatment prior to infection and symptom development. Pathogen populations resistant to sterol demethylation-inhibiting (FRAC Group 3) fungicides have been reported, so although these products are labeled, fungicides with other modes of action should be used. These include azoxystrobin (Quadris) (Group 11), basic copper sulfate (Basic Copper 50W HB and other copper products) (Group M1), pyraclostrobin (Cabrio) (Group 11), trifloxystrobin (Flint) (Group 11), and penthiopyrad (Fontelis) (Group 7). Do not alternate Group 11 strobilurin fungicides with each other (Cabrio, Quadris and Flint). Products that simply kill spores on contact will not prevent the continuing production of spores nor protect leaves from new infections. For more details check the Beets and Chard section of the New England Vegetable Management Guide, www.nevegetable.org

--Written by Bess Dicklow, Rob Wick and Ruth Hazzard, UMass Extension

Potato leafhopper nymph (above) and adult (below).

WATCH FOR POTATO LEAFHOPPER IN POTATO, EGGPLANT, BEANS

Potato leafhoppers (PLH) were observed this week in potato in western MA (Hampshire & Franklin Co) and in RI; but not yet in central/eastern MA (Norfolk Co) or northern Vermont. It is likely their arrival in these crops will continue to spread, and scouting is warranted. It is important to protect plants when leafhoppers first arrive, before nymphs build up.

Identification. Adults are about 1/4 inch long, light yellow-green, and fly up from foliage when it is disturbed or shaken. These are the first arrivals. PLH overwinters in the southern US and moves north annually. Nymphs will be found later on the underside of leaves, light green, wedge-shaped and very fast-moving.

Damage. Adults and nymphs feed by inserting a needle-like beak into the plant and sucking out sap. They also inject a toxin into the plant, which causes yellowing, browning, and curling of leaves. In potato, leaf margins turn brown and brittle first, followed by death of entire leaves, a condition known as 'hopperburn.' In eggplant, leaf margins and tips turn yellow and curl up. Feeding can reduce yield before damage is visible. Damage can be severe on early-season and red varieties of potato, as well as in green beans, eggplant and raspberries. Long-season cultivars tend to be more tolerant. Beans are more susceptible when they are young than at later stages. Field crops such as alfalfa, clover, soybean, sunflower and tobacco are also hosts.

Scouting and thresholds. It is difficult to count adults since they fly quickly when foliage is shaken or disturbed. Sweep nets can be used to detect adults – treat if more than 1 adult is found per sweep. If you see one adult per plant when you shake the foliage, you are likely in that range. Once nymphs develop, they can be monitored by visually inspecting lower leaf surfaces on lower leaves. Treat if more than 15 nymphs are found per 50 leaves. Use a threshold of 1.5 leafhopper per leaf in eggplant.

Synthetic insecticides. In potato and eggplant, some materials registered for Colorado potato beetle adults will also control leafhopper, including neonic foliar sprays such as Provado or Assail. These and several other carbamate, synthetic pyrethroid and organophosphate products are also registered for leafhopper in potato, eggplant and snap beans. Refer to the New England Vegetable Management Guide for registered products. While the classes of insecticides listed above generally have high toxicity to bees, there are variations within classes; for example, Assail (acetameprid) has a lower toxicity to bees (rated as Medium) while most neonics are rated as High.

Organic insecticides. Pyrethrin (PyGanic EC5.0) has been shown to be the most effective product for reducing leafhopper numbers and damage. Good coverage is important. The residual period is short. Spraying late in the day or in the evening may provide better control than spraying early in the morning. Don't wait for numbers to build up. Row cover can be used to delay PLH infestation in snap beans until flowering, when plants are less susceptible to damage. Using row cover is recommended on young eggplant, as it protects from flea beetles, CPB and PLH.

Pollinators and other beneficials. Although bees do not forage extensively in beans or potatoes, they may be active in the field when these crops or the weeds within the crop fields are flowering. During that time, selection of products with lower toxicity to bees is advised. Look for toxicity information on the label, and also in the New England Vegetable Guide (Table 26, and in the products listed for each crop & pest). For conservation of both native pollinators and honeybees, control weeds in the crop and avoid drift onto flowering borders or crops. However, encouraging some flowering areas in the margins is good for supporting pollinators before and after crops bloom. These can also be a nursery and refuge for beneficial predators and parasites of insect pests. Unfortunately they may also harbor tarnished plant bug which feeds on emerging leaves and flower buds in a very wide range of plants.

--Written by Ruth Hazzard, UMass Extension

FORECASTING TOOLS FOR LATE BLIGHT MANAGEMENT: A NEW RESOURCE FOR MA GROWERS

Due to the cool, wet weather we have been experiencing this spring, potato and tomato growers should be thinking about late blight management. The disease is favored by cloudy days, cool temperatures, and high humidity. The threshold

for initiating late blight spray programs (18 severity values) for tomato and potato has been met across most of the state, while some areas remain below the threshold but are forecast to exceed it within the next few days. This threshold means that if local sources of inoculum--such as overwintered, infected tubers or contaminated seed tubers--are present, LB could develop on any suscebtible plant tissue. For risk-averse growers, this means a first protectant spray to prevent late blight (LB) would be warranted. Other growers may choose to wait until a disease outbreak is reported in their region, despite favorable environmental conditions. The national LB monitoring project, USABlight, reports that so far this year LB has been confirmed only in Florida, where both potato and tomato have been infected with LB strain US-23.

Many sophisticated models and LB forecasting tools have been designed to help growers make spray decisions. Below is an explanation of how these LB forecasting models work, the differences between different LB forecasting tools available on NEWA, and how to use our new MA DSS webpage, which will provide spray interval recommendations to MA growers that are updated daily based on current weather forecasts for 41 locations across the state.

Late Blight Forecasting. The first possible appearance of LB (caused by Phytophthora infestans), and periods of LB favorable weather can be predicted using relative humidity and temperature data collected from networked weather stations. The weather data is converted into units called "severity values" (SV) based on the number of hours above 90% relative humidity at different temperatures, as shown in Table 1.

Table 1. Severity Value Accumulation Using Wallin's System of Forecasting Late Blight

	Hours of RH > 90%						
Average Temp. Range F*	0-9	10-12	13-15	16-18	19-21	22-24	25 +
45-53	0	0	0	1	2	3	4
52-59	0	0	1	2	3	4	4
59-80	0	1	2	3	4	4	4
above 80	No severity values accumulated						

Growers should begin to monitor the accumulation of SV's once the first susceptible tissue emerges. This is generally from potato plants growing from infected potato tubers in a cull pile, volunteers growing from infected tubers that survived the winter, or infected seed tubers you or your neighbors planted. LB is not expected to appear until 1-2 weeks after 18 severity values have accumulated since first emergence of susceptible tissue. NEWA LB forecasting tools are based on a network of weather stations across New England and New York—in MA there are 41 of these networked stations. The models incorporate the past weather data as well as the temperature and relative humidity forecasts from the National Weather Service. The Simcast and DSS models also take into consideration the past and forecast precipitation, to calculate "Fungicide Units," and account for fungicide residues weathering off of leaves when giving spray recommendations.

Available Tools. The Network for Environment and Weather Applications (NEWA) and scientists from Cornell University and other land grant institutions have developed several pest monitoring and forecasting tools that allow growers to make more educated decisions about late blight management.

Blitecast is used to time the first fungicide application on potato. Choose the weather station closest to your or the one that is most similar to the conditions found on your farm. Enter the earliest date that potato foliage was present in your area, usually the date that foliage emerged from overwintered potatoes in cull piles. When you click "get report" you will get a table showing actual and forecast severity values based on National Weather Service forecasts for the chosen weather station. Dates in the top row of the table in blue are based on actual weather data, while dates in yellow are based on forecast weather. When the 18 severity value threshold is reached or forecast, the box displaying the severity value number turns to red, indicating that a threshold has been reached. Apply a fungicide, as soon as you can after the threshold has been reached, to any potato fields with plants larger than 6-8 inches tall.

Simcast is used to time subsequent fungicide applications on potato and tomato and incorporates cultivar susceptibility and fungicide weathering. Spray recommendations are based on an assumption that chlorothalonil is the material being sprayed. Once you've chosen the nearest weather station and entered the information requested, click the "get report" button. On the report page you can see blight units increasing over time, and fungicide units decreasing over time, indicating fungicide residue being lost. Actual weather data is indicated in blue in the top row. Forecast weather is indicated by yellow for forecasts that include rainfall, and orange for forecasts that don't include rainfall. The National Weather Service only forecasts rainfall three days into the future. Once a treatment threshold is reached, for either Blight Units or Fungicide Units, a change in color to red will signal that the threshold has been reached, and a spray is recommended.

The Decision Support System (DSS) uses the same models and site-specific weather data to make recommendations

for both potato and tomato, but you can choose between six different fungicide chemistries and you can enter data specific to your farm such as irrigation history to get even more precise recommendations. For the most accurate and site-specific late blight forecasts, growers can sign up for their own DSS accounts which are available for free, or they can use our new UMass DSS webpage.

This year, in addition to publishing a weekly pest report on late blight outbreaks and progress, Vegetable Notes readers will have access to a new UMass DSS website housing NEWA Decision Support System (DSS) output for each of our 41 NEWA weather stations, thanks to our colleagues at Cornell University who developed and maintain these resources. This is a really powerful tool—it takes the guesswork out of deciding when to spray and allows you to make fungicide applications only when needed based on pathogen biology and local weather conditions.

Using the UMass DSS Web Page. Follow the link to: http://blight.eas.cornell.edu/blight/MA. First, choose the weather station closest to your farm and select potato or tomato based on the host crop of interest. You will then get output that looks like Table 2, below. To use the table, first choose the date you last sprayed, listed across the top of the table in green. Next choose the active ingredient or product that you last sprayed, listed along the left-hand side. The table includes six of the most commonly used fungicides for control of late blight, including copper hydroxide which can be used by certified organic growers and home gardeners. Next, choose whether the cultivar being grown is susceptible, moderately susceptible, or moderately resistant to late blight—use these tables to determine the susceptibility of commercial potato or tomato cultivars. The intersection of the last spray date column and the fungicide/host resistance row is your recommended spray date. Dates in red are based on past weather or weather forecast within the next three days and are thus more reliable. Dates in black are based on the last four days of the seven day forecast and are therefore less reliable. If no date is specified it means that a spray is not recommended within the period when weather forecasts are available. As mentioned earlier, the MA DSS page is updated daily and recommendations will change just as the weather forecast might from day to day.

Table 2. Example of the output report from the new MA DSS webpage

Forecasted Late Blight Critical Threshold									
Last Fungicide Applied			Next Spray Date						
active ingredient	example fungicide product	cultivar susceptibility[1]	Date	Date	Date	Date	Date	Date	Date
Last Spray Date			6/3	6/4	6/5	6/6	6/7	6/8	6/9
chlorothalonil	Bravo WS	S	6/9	6/10	6/10	6/13	6/13	6/13	6/14
		mod S	6/12	6/13	6/14	6/16	6/16	--	--
		mod R	6/13	--	--	--	--	--	--
copper hydroxide	NuCop	S	6/9	6/10	6/10	6/12	6/12	6/13	6/14
		mod S	6/11	6/11	6/13	6/14	6/14	6/15	6/15
		mod R	6/13	--	--	--	--	--	--
cyazofamid	Ranman 400 SC	S	6/10	6/11	6/13	6/14	6/14	6/15	6/16
		mod S	6/13	6/16	--	--	--	--	--
		mod R	6/16	--	--	--	--	--	--
dimethomorph	Forum SC	S	6/9	6/10	6/10	6/13	6/14	6/14	6/15
		mod S	6/13	6/13	6/14	--	--	--	--
		mod R	6/16	--	--	--	--	--	--
fluopicolide	Presidio	S	6/10	6/11	6/13	6/14	6/14	6/15	6/16
		mod S	6/13	6/16	--	--	--	--	--
		mod R	6/16	--	--	--	--	--	--
mandipropamide techn	Revus	S	6/10	6/10	6/13	6/14	6/14	6/15	6/15
		mod S	6/13	6/16	--	--	--	--	--
		mod R	6/16	--	--	--	--	--	--
propamocarb hydrochl	Previcur Flex SC	S	6/10	6/11	6/13	6/14	6/14	6/15	6/16
		mod S	6/13	6/16	--	--	--	--	--
		mod R	6/16	--	--	--	--	--	--
[1]Susceptibility Abbreviations: S = Susceptible R = Resistant									

In recent years, late blight has driven spray programs for disease control in potato and tomato fields, but in the absence of this disease it is still important to manage early blight (*Alternaria solani*) and Septoria leaf spot (*Septoria lycopersici*). There is also a forecasting tool for these diseases known as Tomcast. According to this model, most parts of the state are still below the thresholds for initiating spray programs for these diseases. More details on Tomcast and managing fungal diseases of tomato and potato will appear in future issues of Vegetable Notes.

--Written by Susan B. Scheufele, UMass Extension

UPCOMING EVENTS: IPM FIELD WALKS

In this series, learn to identify and scout fruit and vegetable pests and select integrated pest management strategies that work for you. We will walk the fields with Extension Educators and Farmers in Massachusetts, Rhode Island, and Vermont to learn how each area and farm is practicing IPM. Bring a hand lens if you have one. This series is funded in part by a Northeast IPM Center grant. Each field walk includes 2 education credits for certified pesticide applicators.

July 2nd, 2014, 4-6 pm

Simple Gifts Farm**, 1089 North Pleasant Street, Amherst, MA 01059**

Jeremy Barker Plotkin and Dave Tepfer are the farmer stewards of the North Amherst Community Farm (NACF), a community-owned farmland preservation. The farm integrates vegetable crops and livestock, and connects NACF members with their food supply through a Community Supported Agriculture program, many on-farm events, and a farm store. Farmers in the Simple Gifts apprenticeship program are being trained to scout and monitor crops this year by UMass Extension staff. Come to this field walk to learn how to use pheromone traps to monitor Squash Vine Borer and European Corn Borer, and learn to scout multiple vegetable crops with UMass Extension staff Ruth Hazzard and Lisa McKeag.

July 9th, 2014, 4-6 pm

Casey Farm**, 2325 Boston Neck Rd, Saunderstown, RI, 02874**

Casey Farm is a historic property of Historic New England. This mid-eighteenth-century homestead overlooking Narragansett Bay was the center of a plantation that produced food for local and foreign markets. Today, Lindie Markovich and her crew raise organically grown vegetables, herbs, and flowers for a Community Supported Agriculture program on 8 acres. Lindie and Lauren, University of Rhode Island Extension Summer Staff will scout Casey Farm's fields all season. This field walk will feature: Andy Radin, University of Rhode Island Extension; Lauren Breene, URI Extension Summer Staff; and Ruth Hazzard and Katie Campbell-Nelson, UMass Extension Vegetable Educators.

August 14th, 2014 3:30-6:00 pm

High Meadows Farm**, 742 Westminster West Rd., Putney, VT**

High Meadows Farm is Vermont's oldest certified organic farm. They specialize in growing organic potted herbs year round in over 12,000 sq ft of greenhouses. They have over 65 rolling acres and are proud to show visitors around. They retail their crops at the Brattleboro Farmers Market and wholesale their crops throughout New England. This field walk is being organized by NOFA-VT and will feature: Ann Hazelrigg, UVM extension plant pathologist and director of the Plant Diagnostic Clinic; Mollie Klepack, UVM Extension Summer Vegetable scout; and Katie Campbell-Nelson, UMass Extension Vegetable Educator. Space is limited; pre-registration is required (RSVP to info@nofavt.org or 802-434-4122). $10 NOFA-VT & VVBGA members, $20 non-members.

August 22nd, 2014, 3-5 pm

The Farm School, 488 Moore Hill Road, Athol, MA 01331

The Farm School has a day camp program for elementary students, a middle school, and an adult apprenticeship program. The apprentices grow food for a 175 member CSA, Farmers' Market, and manage 150 acres of forest land. The adult program's teacher/growers, Tyson Neukirch and Carlen Rigrod partnered with UMass Extension to train their students in IPM and scouting techniques. This field walk will feature IPM scouting and management practices in apples, raspberries, and multiple vegetable crops with UMass Extension staff: Ruth Hazzard (vegetable), Katie Campbell-Nelson (vegetable), Sonia Schloemann (small fruit), and Arthur Tuttle (tree fruit).

OTHER UPCOMING EVENTS

Bee Field Day 2014

When: Saturday, June 21, 2014 - 9:00am to 3:30pm

Where: UMass Agronomy Farm, 89-91 River Rd, S. Deerfield, MA 01373

Field Day is an opportunity to learn from experienced beekeepers the practical tasks of hive management. Expert beekeepers volunteer their time to share techniques on pest & disease management, Queen rearing, swarm prevention, and a variety of practical skills. It is an opportunity to learn and ask questions from some of our best state and New England beekeepers. This is a free event, open to all beekeepers and the public. It is sponsored by the Massachusetts

Beekeepers Association, The University of Massachusetts and hosted by the Franklin County Bee Association.

Worker Protection Training

When: Wednesday, June 25, 2014, 2:00pm to 4:00pm

Where: UMass Cranberry Station, 1 State Bog Rd, East Wareham, MA 02538

There is a $5 fee for manual. If you have a pesticide license, you do not need this class. Please contact Marty Sylvia by email or at 508-295-2212 x 20 to register or for more info.

UMass Agricultural Field Day

When: Tuesday, July 29, 2014, 10:00am to 4:00pm

Where: UMass Animal and Crop Research Center, 89-91 North River Road, South Deerfield, MA 01373

Come tour the research farm and learn about all of the exciting projects currently underway on a broad range of agricultural topics. A full list of presentations and other details coming soon! Contact Madeline Madin, cdle@umext.umass.edu, 413-545-5221 for more information.

Vegetable Notes. Ruth Hazzard, Katie Campbell-Nelson, Lisa McKeag, Susan Scheufele, co-editors. Vegetable Notes is published weekly from May to September and monthly 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.