



UMass
Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts since 1975



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CROP CONDITIONS

Winter has arrived just in time for spring! Are you ready? Some early greenhouse crops have already been seeded. With the warm temperature this winter, many growers continued to work outdoors on infrastructure repairs and are grateful for the snow now to give themselves a break. The cold weather is also a good excuse to stay indoors and inventory supplies; amendments, spray materials, seeds. As seed orders are coming in, the Vegetable Program is receiving more seeds for hot water treatment. A submission form may be found here: [Hot Water Seed Treatment](#). In between ordering supplies, perhaps you would like to read up on some of the great talks you may have missed at the New England Vegetable and Fruit Conference in December, 2015. Conference proceedings and power point presentations may be found here: www.newenglandvfc.org.

The article this issue on “Materials for Managing Multiple Cucurbit Diseases” came from the conference proceedings for Meg McGrath’s (Cornell Plant Pathologist) presentation and includes new materials, tips for resistance management and options for organic growers.

Among the MANY other practical and informative presentations were:

[Winter Insects, Diseases and Rotations in High Tunnels](#), Judson Reid, Cornell Vegetable Program

[Working Smarter, Not Harder with Innovative Tools at Pleasant Valley Farm](#), PPT

Paul Arnold, Pleasant Valley Farm

[Nutrient Content, Availability and Release Rates from Natural Fertilizers](#), PPT Bruce Hoskins, University of Maine

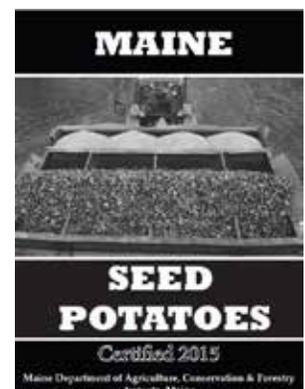
[Satisfying High Tunnel Tomato Nutrient Demands](#), PPT Steve Bogash, Pennsylvania State University



A high tunnel kale crop going strong

CERTIFIED POTATO SEED FOR 2016

Since potatoes are grown by propagating tuber tissue, as opposed to being grown from true seed, many pathogens, especially viruses and bacteria, can be carried over from season to season and can build up in the seed stock over time. Therefore, the best way to control bacterial and viral diseases is to keep it out of the seed in the first place, and seed certification programs were formed to fulfill this need. Certification of potato seed is up to individual states, either through a department of agriculture or through a land-grant university, and states differ slightly in the methods and terminology used. Nearly all New England potato growers source their seed from Maine (and to a lesser extent New York and Ontario) or go through a seed broker who uses the same sources, so we will focus on procedures and terminology used by the Maine DAR seed certification program as we discuss some of the important things to look at when sourcing seed.



Age: During potato production, the plant is constantly exposed to diseases and the probability of a seed lot becoming contaminated with pathogens increases with each year that lot is planted. To minimize this kind of contamination, seed certification agencies limit the number of years the seed lot can be eligible for certification. In Maine these are listed as field years (FY) and lots are limited to being grown for six years, so an F1 seed lot will have a lower likelihood of contamination than an F6 seed lot and would be preferable.

Field Inspections: These are conducted twice during the growing season, and inspectors will walk through the field looking for symptoms of disease. In order to pass as certified seed in ME, the lot must pass two field inspections during the regular growing season and contain no more than 3% total virus. There are zero tolerances for root-knot nematode and bacterial ring spot—presence of either of these would result in immediate rejection of a seedlot. Importantly, potato tubers may be infected with a virus or other pathogen and not show symptoms on the foliage. This is especially important for potato virus Y (PVY) which can cause necrotic spots on tubers while foliage is unaffected on some varieties. In these cases, a field inspection alone would lead to infected tubers passing certification. Therefore, another set of tests was developed known as the winter test or the Florida test (where the tests are carried out).



PVY symptoms on foliage (top, credit S Scheufele) and tuber (bottom, credit B Watt)

Florida Test: A subsample from all seedlots which pass the field inspections get sent to FL to be grown out over the winter. The emerged plants go through two more rounds of field testing for symptoms of virus diseases and lots are then classified as “foundation” or “certified”, meaning they harbor less than 0.55% total virus, or 0.56-5% total virus, respectively. This ensures a more accurate determination of how much virus is really present in the seed and you should always ask for these test results when buying seed.

ELISA: Varieties considered to be latent for PVY (carry the virus but do not show symptoms on foliage) including Blazer russet, Caribou russet, Easton, Gem russet, Russet Norkotah, and Shepody undergo lab testing to document presence of the virus. This is the most accurate way to determine presence of the pathogen but since it is more labor and cost intensive it is only done on varieties for which field testing is not effective.

For 2016: Unfortunately, this year the farm in FL where the winter tests are conducted experienced severe flooding and there was a complete crop failure. So the certification of seedlots for 2016 relies only on the field tests conducted in 2015, and the amount of virus present may be underestimated. Some seedlots are being lab tested at this point to determine the level of virus present. We recommend that growers ask if there was a lab based post-harvest test completed and if so ask to see the result. If there was no post-harvest test done growers should request that one be done. Another tactic is to look back at data from previous years for particular farms and try to find one with a good track record—low virus levels, low incidence of seedlots being rejected or downgraded. Most of the seed growers are trying hard to keep virus levels down but it has been an uphill battle. ELISA testing for latent varieties was still conducted and these results are available for this year.

The book: All of the test results and classification of seedlots are published each year and are accessible here: http://www.maine.gov/dacf/php/seed_potato/20152016FieldCertification.pdf. When choosing potato seed you should look at the field year (FY) and the ‘% mosaic’ which reflects the amount of PVY present. The class is either foundation (F= < 0.56% virus) or certified (C= < 3% virus). Where you see FC that means the seedlot was entered as Foundation grade based on field tests but did not pass winter or ELISA lab test and is considered Certified. Be careful this year selecting your seed and look for the lowest percentage of virus and the youngest seedlot you can find.

Farm Name	Town	Acres	Cert#	FY	%LR	%MOS	%MIX	Class
Adirondack Red								
Bartlett Farms	Littleton	2.300	026T	FY4	0	1	0	FC
Dick York dba Nature's Circle Farm	Houlton	0.730	339F	FY5	0	0	0	F
Jim Gerritsen/Wood Prairie Farm	Bridgewater	0.290	491(2)A	FY4	0	0.01	0	F
Jim Gerritsen/Wood Prairie Farm	Bridgewater	0.190	491Z	FY4	0	0	0	F
Lajole Growers LLC	Van Buren	3.000	121A	FY5	0	0.8	0	C
Maine Seed Potato Board (Porter Farm)	Presque Isle	0.600	900C	FY2	0	0	0	F
Treeland Farms	Hodgdon	1.500	230B	FY5	0	1.8	0	FC

Blackleg: Last year reports of a new bacterium causing an extreme form of blackleg trickled in from around the Northeast. This bacterium, known as *Dickeya*, causes soft rot of seed tubers (at stolon end or on lenticels) and typical blackleg symptoms in the field which include darkening and hollowing out of the stems, wilt and dessication of foliage under dry conditions, and gooey rot under moist conditions. Because this is potentially a new organism causing disease in the US, the USDA is asking us to help them survey for the disease in MA. If you suspect seed tubers of contamination with black leg or see symptoms of blackleg in the field this spring please call UMass Extension at 413-577-3976.

-by Sue Scheufele, UMass Vegetable Program



Blackleg symptoms on stem, credit S Scheufele

SCOUTING GUIDELINES IN GREENHOUSES

If you've been growing greens in your greenhouse all winter long, it's likely you've extended your pest season as well. If you're just beginning to think about seeding your first flats of transplants, it's important to make sure you're starting off on the right foot. Either way, having a good scouting strategy is an essential part of a successful pest management plan in greenhouses. These guidelines from the UMass Floriculture program are also excellent advice for vegetable growers. See the slideshow, Tips on Scouting Spring Ornamental Plants, in the Resources section below for some great photos to help you identify aphids and other pests.

Small greenhouses (< 4,000 sq.) can be scouted as one unit. Larger greenhouses should be divided into 2,000 to 3,000 sq. ft. sections for ease of scouting. Scout propagation areas at least every 3 to 4 days. Use your prior experience to determine how many plants and which plants to inspect (those that are most susceptible to pests or diseases in your greenhouse). The more plants or locations inspected, the more likely it is that a problem will be detected in a timely manner, when treatments are the easiest. In practice, scouting is a compromise between thoroughness (examining everything), efficiency (putting limited time to the best use), and cost (the value of improved management information). Sampling a predetermined number of plants in each crop increases the likelihood of locating "hot spots," which are areas with high arthropod pest populations.

One way is to spend a predetermined amount of time per area of growing space, such as 5 to 10 minutes for each 1,000 square feet of growing area, inspecting 20 or more randomly chosen plants. In addition to randomly selecting plants, be sure to inspect those plants that have always been a problem for you in the past.

Scouting should begin at the major doorway, which is usually an entry point of pests. Special attention should be paid to plants near vents where pests may come in from outdoors.

Walk every aisle and move from bench to bench in a zigzag pattern. Examine plant parts in a systematic manner. For example, begin with buds or flowers, then inspect new growth, younger leaves, older leaves and finally basal stems and finally growing media. Examine leaf axils and the tops and undersides of leaves. Many pests prefer the undersides of leaves or inner, protected plant parts. Use a 10- 30x hand lens to make it easier to see the small arthropod pests. If the plants are small, the sample unit may be an entire plant; for larger plants the sample unit may be a set number of shoots and leaves, such as 2 to 6 per plant. Don't forget to inspect hanging baskets or any plants on the floor. The first plant showing symptoms becomes an "indicator plant". This plant is tagged to allow the scout to easily find it from a distance. Indicator plants can be used to examine the pest's development cycle and to monitor the effectiveness of a treatment. Indicator plants should be marked and numbered with a colored flag or flagging tape so the scout can identify them quickly each week.



In general, it's been a great season for growing greens in high tunnels, but this is a great time to scout crops - this week we found (clockwise from top left): Cladosporium in spinach, potassium deficiency in kale, chickweed, and rodent damage on kale stems.

Photos K Campbell-Nelson

Indicator plants (petunias or fava beans) are also used to detect the early presence of tospoviruses (Impatiens Necrotic Spot Virus (INSV) and tomato spotted wilt virus) and thrips.

Weeds hidden under benches or behind the furnace are often a source of overwintering insect and mites, so look for and hand-pull those troublesome weeds. Place the weeds in a plastic bag to avoid spreading any weed seeds or insect or mite pests.

For at least several plants in each section, examine roots for root decay, root-feeding insects (root mealybugs or root aphids) or other problems. Follow the same pattern of inspecting each plant every time. To avoid spreading diseases, wash hands thoroughly or wear disposable gloves and discard them after handling any plants you suspect might be diseased.

Resources:

[Tips on Scouting Spring Ornamental Plants](#), (UConn Extension)

[IPM Scouting and Decision Making](#) (UMass Extension)

[Identifying Some Pests and Beneficial Insects on Sticky Cards](#) (UConn Extension)

[Integrated Pest Management for Bedding Plants: A Scouting and Pest Management Guide](#) (see section III on scouting), (Cornell University)

-by Tina Smith, UMass Extension and Leanne Pundt, UConn Extension. Originally published in the UMass Floriculture Greenhouse Update, January 29, 2016.

MATERIALS FOR MANAGING MULTIPLE CUCURBIT DISEASES

As growers are planning their product purchases for the season, we thought now would be a good time to publish this article adapted from Meg McGrath's conference proceedings at the December 2015 New England Vegetable and Fruit Conference in Manchester, NH. While an integrated management strategy is heavily dependent on cultural practices, we will focus on fungicide programs and resistance management in this article so that you can get on with your purchasing decisions and we'll cover cultural practices later in the season.

Every year in the Northeast, cucurbit crops are potentially affected by more diseases than most other vegetable crops! Powdery mildew always occurs due to the quantity of easily wind-dispersed spores that the pathogen produces and the breadth of conditions under which it can develop (no high moisture requirement). The downy mildew pathogen also can move long distances; its occurrence in the Northeast varies yearly, especially on crops other than cucumber. Occurrence of other diseases varies among farms depending on whether the pathogen is in the soil (several including Phytophthora blight), surviving in alternative host plants including weeds (e.g. white mold, viruses), present in insect vectors (e.g. bacterial wilt, viruses) or present in/on crop seed (e.g. bacterial leaf spot). Infected crops at a near-by farm can also be a source of pathogens that move short distances such as during a rainstorm (e.g. Plectosporium blight). Most diseases are more severe during a rainy than dry season because wet leaves or soil are favorable conditions for most pathogens (exceptions include powdery mildew, bacterial wilt, and viruses). Knowing early symptoms facilitates early detection. It is also important to have current information on fungicides (resistance in the pathogens) and resistant crop varieties. Below are highlighted cucurbit diseases followed by a fungicide program including recommendations for resistance management and for organic growers. See Table 1 at the end of this article for a reference guide to materials.

Powdery mildew evolves resistance to fungicides quickly, because of frequent exposure farther south where there are longer growing seasons and from where the spores come annually. Alternate among targeted, mobile fungicides in the 4 chemical groups below, and apply with a protectant contact fungicide (ie. chlorothalonil, sulfur, copper, botanical and mineral oils, or biopesticides) to manage resistance development and avoid control failure if resistance occurs; but also to comply with label use restrictions. Begin spray programs very early in disease development (one older leaf out of 50 with symptoms).

- Vivando (FRAC Code U8) is a new fungicide and mode of action. It has exhibited excellent control in fungicide

evaluations conducted recently. Do not mix with horticultural oils. It has a 365 day plant back restriction for non-labeled crops.

- Torino (U6) has exhibited excellent control in fungicide evaluations conducted recently. Consecutive applications are not recommended.
- Quintec (13) has been consistently effective in fungicide evaluations. Label specifies no more than two consecutive applications plus a crop maximum of four applications, and no aerial applications. It is not labeled for use on edible-peel cucurbits, so only use on melon, pumpkin, winter squash, or gourd. 10-14 day spray interval.
- DMI fungicides (3) include Proline and Procure, which are considered most effective, plus Aprovia Top, Rally, Tebuzol, Folicur, and Inspire Super. Resistance is quantitative. Highest label rate is recommended because the pathogen has become less sensitive to this chemistry. Efficacy has varied in fungicide evaluations. Procure applied at its highest label rate provides a higher dose of active ingredient than the other Code 3 fungicides.
- Carboxamide fungicides (7) could be included in the program but used sparingly. Resistant pathogen strains have been detected, and are likely the reason efficacy has varied. Cross resistance was documented between Pristine, Aprovia Top, Fontelis, and Merivon, the products registered for use on pumpkins, but not with Luna fungicides, which are labeled for use only on watermelon only so far. Luna fungicides will be recommended once registered.
- Sulfur products such as Microthiol Dispers are highly effective for organic growers if applied early, but can be phytotoxic at temperatures above 90°F or if oils have been sprayed in the last 2 weeks.
- No longer recommended: Resistance continues to be very common among FRAC code 1 (Topsin M) and FRAC code 11; (Quadris, Cabrio and Flint) and these are no longer effective.

Phytophthora blight materials registered in recent years have improved successful management of this disease because of the targeted activity for pathogens in this biological group (oomycetes). Information about these materials follows the section on downy mildew (also an oomycete). A preventive fungicide program is considered essential. Development of fungicide resistance is a concern with all targeted fungicides due to single site mode of action; therefore, alternation amongst chemistry is recommended. Because this disease is soil-borne, resistance management can be very effective on a field-specific basis where the farmer knows what materials the resident pathogen is being exposed to. Resistance to Ranman has been detected in the Southeastern US. Protectant fungicides, such as coppers, are not sufficiently effective to be recommended alone for Phytophthora blight; however, they are useful tank-mixed with targeted fungicides to manage resistance. Presidio has a long rotational interval of 18 months for non-labeled crops, which can be a constraint on its utility. Most vegetable crops are now on the primary or supplemental labels. An important notable exception is sweet corn, which is commonly grown in rotation with pumpkins.



Phytophthora blight. Photo, S Scheufele

Downy mildew is primarily managed with fungicides, though resistant varieties of cucumber are available and highly effective. An integrated program with fungicides applied to resistant varieties is recommended. As with powdery mildew, fungicide resistance is also a concern with the downy mildew pathogen and therefore the fungicide program recommended is also based on the use of targeted, mobile fungicides applied in alternation based on FRAC Code (see list below) on a weekly schedule and tank mixed with a protectant fungicide (chlorothalonil or mancozeb, or copper) beginning very early in disease development.

An important tool for determining when fungicide application is warranted is the forecast web site for this disease: <http://cdm.ipmpipe.org>. The risk of downy mildew occurring throughout the Eastern US is forecast and posted three times a week and includes the crops it is occurring on. Pathotypes exist that differ in their ability to infect the various cucurbits. All pathotypes can infect cucumber. Forecasts enable timely fungicide applications to the correct crops. Label directions for some fungicides state to begin use before infection or disease development. The forecasting program helps ensure this is accomplished. Growers



CDM on upper and lower leaf surfaces

can subscribe to receive customizable alerts by e-mail or text message.

Fungicides for Phytophthora blight (PB) and/or downy mildew (DM):

- Presidio (FRAC Code 43). Use early in the season for PB when DM is not yet a concern. No longer effective for DM because of resistance. Do not make 2 consecutive applications. Must be applied with another fungicide.
- Ranman (21). Use organosilicone surfactant when water volumes are less than 60 gallons per acre. Make no more than 3 consecutive applications. Low efficacy on DM in cucumber.
- Zing! and Gavel (22 + M). These are the only products that have a targeted fungicide and a protectant fungicide mixed together (chlorothalonil or mancozeb). Only Gavel is labeled for PB as well as DM. Make no more than 2 applications in succession. Limit total use with all products used to 1.6 lb zoaxamide and 9.44 lb chlorothalonil/acre/season. The amount of chlorothalonil in an application of Zing! (1.18 lb/A) is less than the highest label rate of chlorothalonil fungicides for downy mildew (1.5 lb/A) and is below the range for other diseases including powdery mildew (1.5-2.25 lb/A). Increasing the amount of chlorothalonil applied is prudent for these diseases. To obtain an application rate of 1.5-2.25 lb/A chlorothalonil, tank mix Bravo WeatherStik at 0.43-1.43 pt/A with Zing!.
- Zampro (40, 45) and Revus (40). While in the same fungicide chemical group, there is indication they may have slightly different modes of action, thus there may be benefit to using one for the first application of a product in this group in a fungicide program and then switching to the other product later in the program. Make no more than 2 consecutive applications (none with Revus). Revus must be applied with a spreading/penetrating type adjuvant.
- Ariston, Curzate or Tanos (27). These have some curative activity (up to 2 days under cool temperatures) but limited residual activity (about 3-5 days). They can be a good choice when it was not possible to apply fungicide at the start of a high risk period with temperatures below 80°F. Apply another targeted fungicide 3-5 days later. Curzate and Tanos must be tank-mixed with a protectant; Ariston also contains chlorothalonil. No consecutive applications of Tanos are permitted.
- Phosphorous acid fungicides (33). There are numerous products (e.g. Agri-Fos, Fosphite, K-Phite, Phostrol, ProPhyt, Rampart), all effective only for PB. They are recommended used at a low label rate tank mixed with the targeted fungicides listed here for PB.
- Previcur Flex (28). Use sparingly (less than label limit of 5 times in a season). Reduced efficacy recently is thought to be due to fungicide resistance.
- Recommended protectant fungicides: Chlorothalonil and mancozeb are the main protectant fungicides for DM and PB. Copper is also good for PB, but isn't as effective for DM.
- No longer recommended: Resistance to fluopicolide (active ingredient in Presidio), to mefenoxam and metalaxyl (Ridomil) and to strobilurins (e.g. Cabrio) are sufficiently common that fungicides with these ingredients, which use to be highly effective, are now ineffective.
- For Organic growers, biopesticides are the only options available for PB and can also be used for DM, but efficacy data is lacking. Bio-Tam when trialed in Massachusetts in 2013, was not more effective on PB than untreated control plots. There are several products (Actinovate, Double Nickel, Regalia, RootShield, Serenade Soil, SoilGard, Bio-Tam, etc.) that can be applied to soil pre-transplant, at planting, and via drip to manage the blight pathogen, *Phytophthora capsici*, in the root and crown zone and to induce plant resistance (Regalia). Many can also be applied to foliage for DM suppression. Additionally, copper may be more effective than biopesticides for DM control.

Management of other cucurbit diseases:

Use fungicide-treated seed and/or seed that has been tested for pathogens. FarMore commercial seed treatment also has an insecticide. Diseases managed with this strategy: **Alternaria leaf blight, angular leaf spot, anthracnose, damping-off, Fusarium wilt, gummy stem blight/black rot, scab, Septoria leaf spot.**

Apply pesticides as needed (fungicides before rain for most diseases except powdery mildew):

Insecticide: Admire Pro at planting or transplanting for cucumber beetles, which carry bacteria that cause bacterial wilt.
Or use FarMore-treated seed.

Apply Contans before or at planting for **white mold**.

Ridomil Gold EC (Code 4), Previcur Flex (28) or biopesticides (Actinovate, Bio-Tam, Double Nickel, Regalia, Root-Shield, Serenade Soil, SoilGard, etc) at planting for **damping-off**.

Biopesticides (see above) at planting for **Phytophthora blight** and **Fusarium crown rot**.

Tank-mix mobile fungicides with a protectant or contact fungicide, with the exception of Zing! (or Gavel), which are formulated with chlorothalonil or mancozeb. Need to tank-mix is specified in use directions on many labels.

- Sulfur is a very effective, inexpensive product for powdery mildew, no efficacy for other diseases.
- Oils (several botanical and mineral oils available) are also a good choice for powdery mildew only.
- Chlorothalonil and copper have broad-spectrum activity.
- Mancozeb is recommended when only downy mildew is occurring.

A preventive schedule is especially important with copper for **angular** and **bacterial leaf spots**.

Apply targeted fungicides in alternation based on FRAC code when the following diseases occur starting at first symptom or when risk high, tank-mix with protectant fungicide:

- **Alternaria leaf spot.** Fontelis (7), Inspire Super (3,9), Aprovia Top (3,7), Pristine (7,11), QoI fungicides (11), Reason (11), Tanos (27).
- **Anthraco**se. Aprovia Top (3,7), Inspire Super (3,9), Pristine (7,11), QoI fungicides (11), Tanos (27), and Topsin M (1).
- **Downy mildew, Powdery mildew, Phytophthora.** See sections above.
- **Gummy stem blight/Black rot.** Fontelis (7)*, Aprovia Top (3,7), Inspire Super (3,9), Pristine (7,11)*, Proline (3), Switch (9,12), QoI fungicides (11)*, and Topsin M (1)*.
- **Plectosporium blight.** Aprovia Top (3,7), Inspire Super (3,9), and QoI fungicides (11)*.
- **Septoria leaf spot.** Aprovia Top (3,7) and Inspire Super (3,9).

* Resistance detected in the US.

Please Note: The specific directions on pesticide labels must be adhered to -- they supersede these recommendations, if there is a conflict. Note that some products mentioned are not yet registered for use on cucurbits. Check labels for use restrictions. Any reference to commercial products, trade or brand names is for information only; no endorsement is intended.

-by Margaret Tuttle McGrath, Plant Pathology and Plant-Microbe Biology Section, Cornell University. Adapted by Katie Campbell-Nelson, UMass Extension Vegetable Program, 2016.

Table 1. Information on Fungicides for Cucurbit Disease Management

	Fungicide	FRAC Code	Diseases ^a	Recommended Rate/A (labeled)	REI	PHI	Seasonal Limits	Approx. \$/ A/spray
Mobile	Vivando ^b	U8	PM	15 fl oz	12 h	0 d	3 sprays	\$33.15
	Torino	U6	PM	3.4 oz	4 h	0 d	2 sprays	\$24.00
	Quintec	13	PM	6 fl oz (4-6)	12 h	3 d	24 fl oz	\$23.60
	Proline ^c	3	PM, GB	5.7 fl oz	12 h	7 d	2 sprays	
	Procure ^c	3	PM ^c	8 fl oz (4-8)	12 h	0 d	40 fl oz	\$36.84
	Inspire Super	3 + 9	AL, AN, GB, PL, SL	20 fl oz (16-20)	12 h	7 d	4 sprays	\$30.94
	Fontelis ^c	7	PM, AL, GB ^c	16 fl oz (12-16)	12 h	0 d	3 sprays	\$26.08
	Merivon, Pristine ^c	7 + 11	PM ^c , AL, AN, GB ^c	18.5 oz (12.5-18.5)	12 h	0 d	4 sprays (74 oz)	\$70.85 (Pristine)
	Ranman ^d	21	DM, PB	2.75 fl oz (2.1-2.75)	12 h	0 d	6 sprays	\$25.24
	Zampro	40 + 45	DM, PB	14 fl oz	12 h	0 d	3 sprays	\$31.78
	Forum	40	DM, PB	6 fl oz	12 h	0 d	5 sprays	\$17.86
	Revus ^c	40	DM, PB	8 fl oz	12 h	0 d	4 sprays (32 fl oz)	\$30.31
	Phostrol, etc. ^f	33	PB	2.5 – 5 pt	4 h	0 d	7 sprays	\$11.44 – \$22.88
	Presidio ^{c, b}	43	DM ^c , PB	4 fl oz (3 – 4)	12 h	2 d	4 sprays (12 fl oz)	\$44.94
	Tanos ^e	27 + 11	AL, DM, PB	8 oz	12 h	3 d	4 sprays	\$25.02
	Zingl	22 + M5	DM	36 fl oz	12 h	0 d	8 sprays	\$17.72
Curzate ^e	27	DM	3.2 oz	12 h	3 d	9 sprays	\$13.26	
Previcur Flex ^c	28	DM ^c	1.2 pt	12 h	2 d	6 pints	\$18.32	
Contact	Microthiol Disperss ^g	M2	PM	5 lb (2-10)	24 h	0 d		\$4.85
	Bravo Weather Stik	M5	AN, DM, GB, PL, PM, SL	2 pt (1.5-3)	12 h	0 d	21 pints	\$9.69

a AL = *Alternaria* leaf spot, AN = *Anthraco*se, GB = *Gummy Stem Blight* DM = *Downy Mildew*, PB = *Phytophthora Blight*, PL = *Plectosporium*, PM = *Powdery Mildew*, SL = *Septoria Leaf Spot*

b Plant-back restriction for non-labeled crops is 365 days for Vivando and 18-month for Presidio.

c Limited use recommended because resistance suspected of affecting efficacy especially when applied often.

d Rate range applies for downy mildew; high rate for blight.

e Short residual; apply another fungicide within 5 days.

f Other phosphorous acid fungicides include ProPhyt and Fosphite. Rate and seasonal limits vary a little among products.

Recommended tank mixed with other fungicides. Note that there are also phosphate fertilizers, which are not fungicides.

g Approved for organic use.

NEWS

VEGETABLE PROGRAM SURVEY

I have been traveling the state this winter visiting with many of you at meetings (CRAFT, MFBF, NEVBGA, NOFA, SEMAP) to give an annual update of the Vegetable Program and to gather your input on our priorities via this survey. Your responses will help us adapt the UMass Extension Vegetable Program to better suit your needs. The survey should take you about 5 minutes to complete.

Click here to access the survey: <https://www.surveymonkey.com/r/UMassVeg>

Click here to read our annual report: [2015 UMass Vegetable Program Annual Report](#)

Thanks!

Katie Campbell-Nelson

DEADLINE TO OBTAIN DISASTER COVERAGE FOR SPRING-SEEDED CROPS IS MARCH 15TH

Vegetable growers can purchase Federal Crop Insurance on potatoes and sweet corn from an authorized Federal Crop Insurance sales agent. These policies protect growers from losses due to natural disasters.

Growers of all other spring-seeded vegetable crops can obtain coverage under the Non-insured Crop Disaster Assistance Program (NAP) administered by the USDA - Farm Service Agency (FSA). Producers can obtain catastrophic coverage which provides protection for losses exceeding 50% of the crops historical yield paid out at 55% of the established price for the crop. "Buy-Up" coverage is available in 5% increments for losses exceeding between 35 - 50% of the crop's historical yield paid out at 100% of the established price for the crop. An added incentive for Beginning, Historically Underserved and Limited Resource Producers includes a waiver of NAP administrative fees and a 50% reduction in NAP premiums for coverage over the 50% catastrophic level. Interested growers are encouraged to contact the USDA-FSA Office that serves their farm.

Another program that vegetable growers should take a close look at is the Whole Farm Revenue Protection (WFRP) program. WFRP provides a risk management safety net for all commodities on the farm under one insurance policy. WFRP is tailored to any farm with up to \$8.5 million in insured revenue including farms with specialty or organic crops and those marketing to local, regional, specialty or direct markets. Coverage levels range from 50-85% of your farm's historic average revenue and there are adjustments allowed for expanding operations. WFRP is available through authorized Federal Crop insurance sales agents.

Now is a great time for vegetable growers to take a closer look at all of these programs to see which programs may afford them with a vital level of risk protection. More information is available through the UMass Extension Crop Insurance/Risk Management Education Program at <https://ag.umass.edu/risk-management>. The website contains information on all the programs. Don't delay, March 15th will be here before you know it!

EVENTS

[Plant Nutrition for Greenhouse Crops: On-site Media Testing](#)

When: Tuesday, February 16, 2016 from 12:30 pm to 4:00 pm

Where: Publick House, Rte 131, 277 Main St, Sturbridge, MA 01566

Presented by the UMass Extension Greenhouse Crops & Floriculture Program.

Cost: \$30 (Includes refreshments and handouts)

- Taking Soil Samples & Media Testing Demonstration
- Learning to Identify Nutrient Disorders
- Sorting Through Different Types of Meters

- Interpreting Soil Test Result
- Checking and Calibrating Meters – Bring your meter to be calibrated!

For more information contact:

Tina Smith, Univ. of Mass, Amherst 413-545-5306, tsmithatumext.umass.edu

Geoffrey Njue, Univ. of Mass, Cranberry Exp. Station 508-295-2212 ext. 47, gnjueatumext.umass.edu

Open House for Farmers at Commonwealth Kitchen

When: Thursday, February 18, 2016 from 10 am to 12:30 pm

Where: Commonwealth Kitchen, 196 Quincy St, Dorchester, MA 02121

Sponsored by Mass Dept of Ag Resources, Mass Farm Bureau Federation, Sustainable Business Network of Mass and the Southeast Mass Ag Partnership. Sauces, pickles and jams...Exploring contract production to add value to your fruit and vegetables! Commonwealth Kitchen, a licensed commercial kitchen in Boston, can make value-added products for you from your excess farm produce or seconds, to be sold at farmers markets, farmstands, retail stores or foodservice customers including colleges. Come learn what we offer and what you need to know about costs, labeling and licensing.

Questions? Contact Roz from Commonwealth Kitchen at roz@commonwealthkitchen.org

9th Annual SEMAP Ag & Food Conference

When: Sunday, February 28, 2016 from 9:00 am to 5:00 pm

Where: Bristol County Agricultural High School, 135 Center St, Dighton, MA 02715

The lineup will include workshops for the general public as well as info-packed sessions for farmers and gardeners of all experience levels. Details and registration coming soon!

Look for these talks from UMass Extension personnel:

- Compost Analysis & Interpretation – Katie Campbell-Nelson, Vegetable Program
- 2015 Disease Update – Susan Scheufele, Vegetable Program
- Growing Strawberries – Sonia Schloemann, Small Fruit Program

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Vegetable Notes. Katie Campbell-Nelson, Lisa McKeag, Susan Scheufele, co-editors.

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