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Berry Notes

Prepared by the University of Massachusetts Fruit Team

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Massachusetts Berry Notes Underwriters:



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UPCOMING MEETINGS

SHORTS:

Nutrient Management Regulations

[Public Hearing: 330 CMR 31.00, PLANT NUTRIENT APPLICATION REQUIREMENTS FOR AGRICULTURAL LAND AND NON-AGRICULTURAL LAND, NON-AGRICULTURAL TURF, AND LAWNS](#)

When: Thursday, October 27, 2016 from 10am to 12pm

Where: Division of Fisheries and Wildlife, 1 Rabbit Hill Road, Richard Cronin Building Room 110, Westborough, MA

In addition to oral testimony, written comments will be accepted before and at the Hearing. MDAR will continue to accept written comments until October 27, 2016, at 5:00 P.M. Written comments should be addressed to Taryn LaScola, Director, Division of the Division of Crop and Pest Services, Department of Agricultural Resources, 251 Causeway Street, Suite 500, Boston, MA 02114.

Link to redline version of the regulation: **[330 CMR 31.00 Redline](#)**

Drought Resources for Farmers

A reminder for those who have experienced losses due to the ongoing drought, the Massachusetts Department of Agricultural Resources (MDAR) has assembled a list of resources, including low- or no-interest loan programs from Farm Service Agency (FSA), Massachusetts Drought Emergency Loan Fund, U.S. Small Business Administration Economic Injury Disaster Loans, and Community Involved in Sustaining Agriculture (CISA).

NOTE: the deadlines for some of these programs are fast-approaching. CISA's 0% interest loans for those in Franklin, Hampshire and Hampden counties are the soonest—applications must be submitted to them by October 21, 2016.

ENVIRONMENTAL DATA

The following growing-degree-day (GDD) and precipitation data was collected for an approximately two week period, September 8 through September 21. Soil temperatures and phenological indicators were observed on or about September 21. Total accumulated growing degree days (GDD) represent the heating units above a 50° F baseline temperature collected via our instruments for the 2016 calendar year. This information is intended for use as a guide for monitoring the developmental stages of pests in your location and planning management strategies accordingly.

Region/Location	GDD		Soil Temp (°F at 4" depth)		Precipitation (in inches)	Time/Date of Readings
	2-Week Gain	2016 Total	Sun	Shade	2-Week Gain	
Cape Cod	160	2,786	65	60	2.17"	6:00 PM 10/5
Southeast	100	2,581	63	57	2.45"	5:15 PM 10/5
North Shore	139	2,739	56	52	1.11"	9:00 AM 10/5
East	141	3,004	65	62	1.22"	3:30 PM 10/5
Metro West	85	2,667	54	51	1.35"	5:30 AM 10/5
Central	--	--	--	--	--	--
Pioneer Valley	129	2,904	60	55	1.23"	12:00 PM 10/5
Berkshires	114	2,490	62	58	0.49"	10:00 AM 10/5
AVERAGE	249	2,626	78	72	1.65"	

n/a = information not available

(Source: UMass Landscape Message #22, Oct. 7, 2016)

STRAWBERRY

Building Healthy Soils with Crop Rotation & Cover Crops

Amanda McWhirt, University of Arkansas

As we head into the fall strawberry planting season there are many things to consider to ensure the success of your crop next spring. Checking on your plant source, bed preparation and soil fumigation are all important activities that are likely on your mind, but just as healthy strawberry transplants are critical to a successful crop, so is the health of the soil into which they are planted.

One method for keeping your soil healthy is to rotate what crops are planted on a given area from year to year. Crop rotation provides several benefits to the soil but the most important is suppressing soil borne disease and pests. If you had soil borne diseases or nematodes in your strawberry field last year and you re-plant strawberries in the same spot this year, then those same pathogens are ensured their favorite meal (your strawberry crop) has been replanted on their door step. Year after year this lack of crop rotation helps disease populations grow. This is why many growers experience their most successful crop in the first year of planting on "new" ground, and then experience diminishing production over the next few years. On the other hand, nematodes and soil borne disease cannot easily get up and move to another field if your strawberry crop is moved each year.

Ideally land should be rotated away from strawberries for a minimum of three years to obtain good disease suppression, though five year rotations are even better. The key to planning a successful rotation is to choose

crops that don't share the same diseases as strawberries. In addition, rotating between crops that root to different depths can help break up soil compaction and bring up nutrients from deep in the soil to be used by shallower rooting crops in the next season. Choosing crops that have different nutrient use requirements helps to ensure that the soil is not exhausted of major nutrients. For example strawberries are a heavy nitrogen feeder, while green beans are a low nitrogen feeder.

Having sufficient land to support crop rotation may be a limitation for many growers in North Carolina who focus on strawberry production and have small plots of land. An alternative method to moving where your strawberry crop is planted each year is to plant a summer cover crop between strawberry crops. While this option is less ideal than a true crop rotation, summer cover crops can help to diversify the types of crops planted on your land throughout the year. Cover crops are grasses, broadleaf or legume crops that are planted for the beneficial effects they have on the soil and generally meet all of the above requirements for a successful rotation: they are resistant to strawberry pathogens, they root deeper than the strawberry crop, and legume cover crops can actually increase soil nitrogen if they are mowed and tilled into the soil.



Providing soil cover with a summer cover crop also helps to support populations of beneficial soil microorganisms that need a host plant to survive, like arbuscular mycorrhizal fungi, while not providing a host for pest causing organisms. For example 'Iron clay' variety of Cowpea and Sorghum-Sudangrass are both resistant to

root knot nematode and Sunn Hemp is resistant to sting nematodes. Mustard and brassica cover crops are increasingly being evaluated for their "bio-fumigant" properties on soil diseases and nematodes when they are mowed and tilled into the soil. Furthermore, when cover crops are incorporated into the soil at the end of the season they can increase soil organic matter, which improves soil fertility and supports a diverse and flourishing soil microbial community that can better suppress soil borne disease.

Several years of research conducted at NCSU by Drs. Michelle Schroeder-Moreno and Gina Fernandez, has shown cowpea and pearl millet to be a reliable summer cover crop to precede strawberries. Seeding rates of a mix of 100 lbs. of cowpea and 10 lbs. of pearl millet per acre can help produce as much as 3,000 lbs. of biomass in 8-10 weeks. Additionally cowpea can reliably supply at least a 45 lb. nitrogen credit to the fall planted strawberry crop that can reduce rates of pre-plant fertilizer. In my research with Drs. Schroeder-Moreno and Fernandez,- cover crops in conventionally fumigated systems were shown to increase strawberry fruit yields in some years. The estimated cost of planting a summer cover crop mix like the cowpea + millet mixture mentioned above is around \$150/ acre (See the enterprise budgets on the NCSU strawberry portal).

As you move into planning for success in the upcoming season, crop rotation may be a good option for this year or planning for summer cover crops next summer can help ensure many more successful seasons to come. (**Source:** *The Strawberry Grower, August 2016*)

RASPBERRIES/BLACKBERRIES

Crown Gall and Cane Gall

Kathy Demchack, Penn State Univ. Extension

Crown gall is the more widespread of the two diseases and affects all brambles as well as apples, grapes, peaches, and roses. Only grass-like plants seem to be immune to crown gall. Cane gall occurs only on brambles, with black and purple raspberries being more frequently infected than red raspberries and blackberries. The impact of the disease on plant growth and production can range from no apparent effect to the death of the plant.

Symptoms

Crown and cane gall are characterized by the spongy, rough, pinhead- to golf ball-sized, tumor-like swellings that become brown, woody knots with age. Crown galls develop in the spring on the underground parts--the roots and crown--of the plants. Cane galls develop as whitish

eruptions on the fruiting canes in mid-June. These eruptions later turn brown and then black and begin to disintegrate. More intense gall formation seems to occur in years with higher incidence of winter injury. The diseases cause the production of dry, seedy berries and the stunting and prevention of new cane formation. Weakened canes are broken easily by the wind and are more susceptible to winter injury. The plants might show water stress and nutrient deficiency symptoms since the movement of water and nutrients throughout the plant is disrupted. With cane gall, black and purple raspberries are more often infected than red raspberries and blackberries.

Disease Cycle

Both diseases are caused by soilborne bacteria (crown gall: *Agrobacterium tumefaciens* and cane gall:

Agrobacterium rubi) that infect the plant only through wounds. Wounds can result from natural causes (e.g., insect feeding, frost damage) or from mechanical causes (e.g., pruning, cultivating, harvesting). The bacteria overwinter in the soil and in galls. Bacteria are then spread by splashing rain, running water, cultivation, and pruning from soil and infected plants. As the galls enlarge, the soil can become heavily infested and will remain so for many years.

Disease Management

The best control measure is prevention. Plant only certified, disease-free nursery stock, and take care not to wound the plants, especially the root systems, at planting time. Try to plant only in sites with no history of the diseases, or wait at least 3 to 5 years before replanting in the site. If a diseased plant is detected, remove and burn the roots and tops of the plant. Dispose of the soil surrounding the roots of the affected plant. Titan seems to be especially susceptible to crown gall, as do some of its relatives. No chemical control is known. (**Source:** *Penn State Fruit Fact Sheet Series*)

BLUEBERRY

Timely Blueberry Disease Control

Strategies To Control Bacterial Canker In Blueberries Should Start In The Fall

Jay Pscheidt, Oregon State Univ.

Bacterial canker of blueberry shows up in the spring, but to get it under control, growers in areas such as western Oregon and Washington should make applications of copper-based pesticides in the fall. Here's the bottom line: Spray twice, first before fall rains, preferably the first week in October, and again four weeks later. Bacteria resistant to copper products have been detected frequently in the Willamette Valley and British Columbia. Cultural tactics include using resistant cultivars, removing diseased wood, and avoiding late-summer nitrogen applications.

There is very little published information for bacterial canker on blueberry. A report from Oregon (1953) and another from Tasmania (1984) speculate that infection occurs in the fall even though symptoms occur in the early spring. Each is based on sound observations and isolations of the bacteria. Three spray trials done by E.K. Vaughan and C.A. Boller in the 1950s clearly show fall applications of Bordeaux reduce the number of diseased plants in the spring. Fall applications were made in early October and again in early November. Unfortunately they did not test fall versus spring applications. Such a trial still needs to be done.

Without much more data on blueberries, we can only draw on similar diseases from other crops. This bacterium incites diseases on many crops. It can cause a "fall disease" (such as shoot dieback of Japanese Maple) or a "spring disease"

(such as bacterial blight of lilac). Sometimes the bacteria are active both times of the year such as in cherries.

Bacterial canker of cherry has both fall (canker) and spring (dead bud) symptoms. "Fall" or "spring" indicates when the bacteria are actively invading plant tissue and when control tactics are more likely to be effective. Most of the time, symptoms occur in the very late dormant season or during spring growth for these crops—even if infection occurs in the fall. These diseases are notorious for being erratic in occurrence, devastating when they do occur, and frustrating to manage given the limited tools we have available.

Copper-based products are about the only legal materials one can use against these diseases. Chemical management of these diseases is next to impossible as a sole tactic. Unfortunately we see too much use of copper-based products alone. The notion of using a little more, at higher rates, with more applications to get better timing is the wrong path to go down.

The Problem With Copper

There is published research that clearly shows bacteria resistant to copper-based products in blueberries in the Pacific Northwest. There was a time folks thought that bacteria could not be resistant to copper since it is such a broad-spectrum material hitting many biochemical systems in microorganisms. That changed in the 1990s as evidence mounted against that notion. The more copper is used, the



A water-soaked lesion first appears on canes in January or early February. Then the lesions rapidly expand and turn reddish brown to black. Cankers may extend from a fraction of an inch to the entire length of 1-year-old canes (shoots). Buds in cankered areas are killed. If the stem is not girdled, buds above the canker grow. If girdled, the cane portion above the canker dies. Photo credit: Oregon State University Plant Clinic

more resistant the bacteria become. Just using higher rates and/or more frequently is not sustainable. The addition of other materials to copper mixes just increases the copper ion concentration and thus has the same effect.

In most cases, people reasoned that using more copper was OK thinking that even if they did not get any disease control, that was not a problem as long as it did not harm the plants. Recent published research on cherries, however, has found that applications of copper-based products made bacterial canker worse. In other words, the non-treated trees had significantly less disease than trees treated with copper-based materials.

Bordeaux was one of the first fungicides ever developed being used to combat a downy mildew problem on grapes in the mid 1800s. So much was used for so long that copper toxicity in soils became a problem. It is my

opinion that we should, as an agricultural community, begin to limit the amount of copper that is used so we do not end up with the same problems.

Managing bacterial canker of blueberries will involve the use of one or two applications of copper-based materials in the fall, removal of diseased wood during the winter, and attention to horticultural needs of blueberry such as an acid soil pH. Use of copper-based materials in the spring misses the time of infection and increases the buildup of resistant bacteria.

For specific recommendations visit <http://pnwhandbooks.org/plantdisease/blueberry-vaccinium-corymbosum-bacterial-canker>.

(Source: *Peerbolt Small Fruit Update, Oct. 1 2015*)

Blueberry/Huckleberry (*Vaccinium* spp.) – Witch’s Broom Rust

Adapted from Jay Pscheidt, Oregon State University

Cause: *Pucciniastrum goeppertianum*, a rust fungus that alternates between *Vaccinium* spp. (huckleberry, blueberry, and cranberry) and true firs. Infection of blueberry and huckleberry leads to extensive growth in the phloem each year. The telia encircle the swollen stems and produce teliospores that germinate in the spring. Teliospores produce basidiospores, which are dispersed during rain storms. These spores will infect grand, silver, balsam, and subalpine firs. Aecia produced on the fir needles shed aeciospores that infect huckleberry. A uredinal state has not been found. Cool, moist springs favor disease development. Although easily found in natural settings, it is not considered an economic problem. [Editor’s Note: Reports and direct observations of this disease have increased in New England in recent years.]



*Leaves are OK but stems are overly thickened.
Photo by Jay W. Pscheidt, 1993.*

Symptoms: Evergreen huckleberry (*Vaccinium ovatum*), highbush blueberry (*V. corymbosum*) and lowbush blueberry (*V. angustifolium*) develop a witches' broom of thickened stems with few or no leaves. Telia form in a

reddish brown layer around stems each year. Branches are swollen, spongy, and distinctly yellowish to reddish brown in contrast to the greenish color of normal twigs.

Firs develop white tube-like fruiting structures (aecia) on the lower needle surface. Aecia can mature on current-year needles in late summer or on previous year's needles in early summer. Aeciospores are generally yellow. Severe infections result in needle drop.



*In the center are dark old telia while new telia are forming to either side. They start out white and progressively turn dark red from the bottom up.
Jay W. Pscheidt, 2008.*

Cultural control

- Remove the alternate host for at least 1000 ft around plantations.
- Removal of the affected branches will have little affect beyond aesthetics.
- ‘Rancocas’ is considered to have some resistance to this disease.

Chemical control

No chemicals are specifically registered for this disease on huckleberry; however, the following if applied for labeled diseases may be effective.

- Proline 480 SC at 5.7 fl oz/A. Use up to two (2) applications. Do not use within 7 days of harvest. Group 3 fungicide. 12-hr reentry.
- QuiltXcel at 14 to 21 fl oz/A. Do not use more than 82 fl oz/A/season, more than two (2) sequential

sprays or within 30 days of harvest. Sprayers should not be used on apples. Group 3 + 11 fungicide. 12-hr reentry.

- Tilt at 6 fl oz/A. Do not use more than 30 fl oz/A/season or within 30 days of harvest. 12-hr reentry.

Reference: Ziller, W.G. 1974. The Tree Rusts of Western Canada. Canadian Forestry Service Publication 1329. (**Source:** *Peerbolt Small Fruit Update, Oct. 1 2015*)

GRAPE

SWD and Sour Rot of Grapes

Juliette Carroll, Cornell University

SWD populations are building up and the warm, humid weather of late summer and early fall is very favorable for spotted wing. Any fruit hanging will be at risk of infestation. Not until late November will the majority of female SWD no longer carry eggs, as they prepare for overwintering.

Wayne Wilcox, grape pathologist, Plant Pathology & Plant-Microbe Biology Section, Cornell University, sent this alert out, "...the warm, humid conditions are ideal for the yeast and bacteria that cause sour rot, not just for SWD. These weather conditions strongly favor sour rot, since sour rot appears to require three components: (1) yeast, (2) bacteria, and (3) fruit flies—either the "everyday" fruit fly *Drosophila melanogaster* or SWD *Drosophila suzukii*. SWD is NOT required for sour rot to occur and, indeed, we do not typically find it associated with sour rot in the Finger Lakes region, although sour rot can be common here.

Recent research information on grape sour rot from Wayne's program was summarized last spring on pages 47-57 in [GRAPE DISEASE CONTROL, 2016](#). Included in these pages are details on research trials in field and lab, management tactics, efficacy of fungicides and insecticides, and impact of training systems on the development of sour rot in wine grapes. For those of you growing wine grapes, advising growers on sour rot, or simply interested in a complex and difficult to control disease, these pages are definitely worth a read.

An interesting observation came in yesterday from a wine grape grower in the Finger Lakes where the region has been plagued by drought. Several inches of rain had fallen in their area recently, causing many berries in the cluster to swell and crack. This is an ideal setting for infestation by SWD, other *Drosophila* species, and fruit rot pathogens. (**Source:** *Cornell Univeristy SWD Blog post, Sept. 23, 2016*)

Season Summary from Long Island

Alice Wise, Cornell Univ.

After a summer of severe drought, starting in late August, a series of rain events tested even the most experienced vineyard managers. Rainfall was spotty and much heavier in some areas. There apparently was enough correctly-timed rainfall to bump up berry weights this season. In combination with good set, clusters on many varieties are compact and larger than average this year. Growers have had to cluster thin a bit more than usual or embrace above average yields. Harvest this week included many different white varieties. Flavors are rich and nuanced, very satisfying given the challenging season. The forecast of 3-4 consecutive days of intermittent rain also precipitated harvest decisions. Yields are variable but generally average to above average, brix are moderate, acids moderate to low.

The periodic rainfall has made downy mildew a challenge. This frustrates vineyard managers, even where it is limited to the upper reaches of the VSP canopy. This is a consequence only for fruit that will hang substantially longer. The uncooperative weather has rekindled Botrytis and sour rot infections, though the incidence and severity varies widely from vineyard to vineyard and variety to variety. In the research vineyard, the poster child for sour rot is the lesser known Burgundian variety Aligoté. A few fruit flies accompanied the sour rot but were not nearly as bad as originally feared. Chardonnay harvested in the research vineyard this week was mostly clean with a little Botrytis where air drainage was compromised such as clumps of clusters. It appears that most of these infections were initiated by berry moth infestations. In

the industry, fruit ranges from clean to slightly compromised. Those vineyards with cluster rot are field cleaning and sorting fruit to ensure quality. **This is a season that emphasizes the utility of well-executed bloom-time leaf removal. This practice has far**

reaching benefits, from preventing early powdery mildew outbreaks to tempering late season cluster rot. (*Source: Long Island Fruit & Vegetable Update, No. 26. Sept. 29, 2016*)

GENERAL INFORMATION

SWD Egg Laying – Extreme Drought & Heat

Anna Wallingford, Cornell University

This post was originally posted in the SWD blog: <http://blogs.cornell.edu/swd1/> Written by Dr. Anna Wallingford, postdoctoral research associate, in Dr. Greg Loeb's small fruit and grape entomology program, Cornell University, NYSAES, Geneva, NY.

The earliest ever arrival in New York State of this fast-reproducing insect rang alarm bells in anticipation of heavy infestations in early or midseason berry crops that often escape damage. However, larval infestations have been curiously low in summer raspberry and blueberry crops sampled in many areas, including the Finger Lakes region. We suspect that the hot, dry conditions we have been experiencing could explain these low infestations.



Photo: Faruque Zaman

Breathing tubes of SWD eggs as seen, magnified by a microscope, on the surface of blackberry fruit.

Small flies like SWD are sensitive to desiccation (drying out) and therefore prefer to lay their eggs in darker, more humid conditions. SWD are more likely to lay eggs in shaded fruit, lower in the plant canopy, and even prefer laying eggs during the cooler, low-light conditions of dusk over other times of the day.

A halt in egg laying is reported in California when conditions are dry and temperatures climb above 85-90°F. A recent study conducted by our colleagues in Oregon has found that humidity not only plays a positive role in egg laying behavior, but also in the number of mature eggs carried by female SWD. (Tochen et al. 2016. Humidity affects populations of *Drosophila suzukii* (Diptera: Drosophilidae) in blueberry. *J. Appl. Entomol.* 47-57.) In other words, a female exposed to more humid conditions will make a greater investment of resources to grow new eggs and she will choose to lay more of those eggs.

This sensitivity to hot, dry conditions may explain the curiously low infestation rates we've seen so far in 2016, given the high daily temperatures and drought conditions. And, there are significant implications for management. Plant canopy management may be an important cultural strategy for SWD control. In addition to improving fruit quality, proper pruning can open up plant canopies. An open canopy aids in better spray coverage when applying foliar insecticides and also helps in decreasing the humidity within the microclimate of that canopy. There are ongoing studies taking a direct look at the effects of pruning and humidity on SWD infestations, so stay tuned for more information in the future. (*Source: New York Berry News, 2016-Issue 5, October, 2016*)

Evaluating Berry Production Strategies Under Tunnels

Eric Hanson and Katherine Handon, Michigan State University



Multibay high tunnels.

National demand for fresh brambles and strawberries is strong and growing, but most domestic berries sold in Michigan and other Midwest states are produced in California and other distant areas. Growers in the Upper Midwest as well as the Northeast can grow beautiful raspberries, strawberries and blackberries, but maintaining reliable yields and consistent quality is challenging in our cold winters and short, humid growing seasons.

Protective structures can mitigate these climatic limitations, but selecting the type of structure and plastic film cover is complicated by the enormous array of products available. That's where the [TunnelBerries](#) project comes in. TunnelBerries is a seven-state research and extension project designed to provide growers with the knowledge needed to expand raspberry, blackberry and strawberry production in the Upper Midwest and Northeast U.S. with the use of protective structures or "tunnels." [Michigan State University](#) is the lead institution. We believe Michigan growers have opportunities to take advantage of the "buy local trend" by employing techniques and technologies that enable them to efficiently produce high quality fruit. Tunnels come in many shapes and sizes ranging from large, multiple-acre structures to small hoop systems that can cover single strawberry rows.

The project concentrates on:

- Selection and performance of various tunnel structures and plastic films.
- Optimal methods of pest and disease management in protected environments.
- Plant management for optimal crop yield and quality in protected environments.

Plastic film recycling options.

Tunnels have been shown to increase berry yields and quality. Some diseases and insect pests are also reduced, so tunnels may have particular advantages for organic

production. In addition, harvest seasons can be lengthened under protective structures, with production starting earlier in the summer and continuing later in the fall.

TunnelBerries research project offers growers knowledge on expanding raspberry, blackberry and strawberry production using protective structures or



Standalone tunnels.



Low tunnels.

Visit the project website at TunnelBerries.org for the latest information on structure and plastic selection, variety selection, production economics and more. Additionally, the [TunnelBerries blog](#) and [TunnelBerries Facebook page](#) track current project events. This December 2016, the [North American Bramble Growers Association](#) and [North American Strawberry Growers Association](#) will meet in conjunction with the [Great Lakes Fruit, Vegetable and Farm Market Expo](#). The bramble and strawberry programs will run all day on Monday and Tuesday, Dec. 5-6. Several TunnelBerries team members will be presenting their work during these education

sessions. This is an excellent opportunity for beginners and seasoned growers to learn what is new in berry culture and management. Any current or potential berry

grower should try to attend these programs. (*Source: Michigan Fruit Crop Advisory, Oct. 4, 2016*)

University of Maryland Hops and Barley Project

Bryan Butler, University of Maryland Extension

12 Varieties of Hops were planted May 12th 2016 at WMREC, Keedysville, Maryland.

- The hops were spaced 3.5' x 14', ¼ Acre. Laminated posts with a cable at 18'.
- Posts are 4 feet in the ground.
- Soil was prepared the previous fall, limed and phosphorus and potassium added to optimum levels. Planting received the equivalent of 180 pounds of Nitrogen from three applications in 2016.
- Tall fescue planted between rows spring 2016.
- Weekly IPM scouting with control measures taken as needed.
- Double planting for 2017, need varieties the industry would like us to add.



Current Varieties in the trial:

- 'Alpharoma'
- 'Cascade'
- 'Centennial'
- 'Chinook'
- 'Crystal'

- 'Mt. Hood'
- 'Mt. Ranier'
- 'Nugget'
- 'Sorachi Ace'
- 'Southern Cross'
- 'Tahoma'
- 'Ultra'

Hops spray schedule for establishment:

- 5/13 Ridomil Gold (drench) *Target Pest-* Downy Mildew
- 5/20 Ranman *Target Pest-* Downy Mildew
- 6/8 Ranman+Phostrol+Bifenthrin 8oz. +50 lbs. N *Target Pest-* Downy Mildew and Leafhoppers
- 6/24 Ranman+Bifenthrin 8oz. *Target Pest-* Downy Mildew, Leafhoppers
- 6/31 Phostrol+Bifenthrin 8oz. *Target Pest-* Downy Mildew, Japanese Beetles
- 7/7 Phostrol+Bifenthrin 8oz. *Target Pest-* Downy Mildew, Japanese Beetles, Tent Caterpillars
- 7/15 Pristine+Bifenthrin 16oz. +50 lbs. N *Target Pest-* Downy Mildew, Powdery Mildew, Two spotted Spider Mites
- 7/25 Rally+Admire Pro *Target Pest-* Powdery Mildew, Two spotted Spider Mites,
- 7/29 Flint+M Pede+Malathion *Target Pest-* Downy Mildew Powdery Mildew, Two spotted Spider Mites
- 8/16 M Pede *Target Pest-* Two spotted Spider Mites, Armyworms

3 Varieties of Malting Barley to be planted September 30, 2016 2 bushels per Acre, 4 acre plots.

- Harvest, dry, clean, store in bags.
- Scala (2 row), SY Tepee (2 row), and Thoroughbred (6 row).
- Additionally Erie Rye will be planted, harvested, dried and stored in bags.

(*Source: Maryland Vegetable & Fruit News, Vol. 7, Issue 5, September 16, 2016*)

MDAR's Agricultural Business Training Courses *A few spots still available for winter classes, register now!*

1) **Exploring The Small Farm Dream** - for those thinking about farming as a business, to better understand what's involved in owning/operating a farm to determine whether your business idea is feasible.

Four guided group sessions and a farmer panel using an acclaimed workbook developed in partnership with NESFI and presented by an instructor experienced in starting farm businesses.

Proposed Dates/Location*: Tuesday evenings 6:00 - 9:00 pm - February 28, March 7, March 14, March 21 and March 28, 2017

@ Bristol Community College Fall River campus*

*Dates & location are tentative based on interest. 3 more spots available, application **deadline extended to Oct 31**.

2) **Tilling the Soil of Opportunity** - for existing farms, to help plan for growth and improve decision making on the farm.

The course instructor guides participants through creation of a full business plan during 10 group sessions and provides individualized technical assistance and

confidential one-on-one financial planning. The instructor visits each participant's farm during the course. You must have at least 2 years of documented farm production and income as a for-profit or non-profit farming enterprise to take this course.

Next Tilling the Soil course tentatively scheduled for January - March 2017, location TBD based on the majority preference of those who send in applications.

Course applications are accepted on a rolling basis until a course is filled.

If you are interested in either course, complete & send in an application as soon as possible, available here: www.mass.gov/eea/agencies/agr/land-use/agricultural-business-training-program-abtp.html. Email completed application to mdarfarmviabilityprograms@gmail.com or mail to: Melissa Adams, Massachusetts Department of Agriculture Resources, 101 University Drive Suite C4, Amherst MA 01002.

(Source: MDAR October/November Farm and Market Report, Oct. 7, 2016)

New Massachusetts Loan Fund Increases Access to Capital for Early Stage Farmers and Food Processors Across the State

To help Massachusetts farmers and food processors access financing to start or grow their businesses, The Carrot Project has joined forces with the Franklin County Community Development Corporation to create the Massachusetts Farm & Food Loan Fund with financial backing provided by the [Massachusetts Society for Promoting Agriculture](http://www.mass.gov/eea/agencies/agr/land-use/agricultural-business-training-program-abtp.html) (MSPA).

The Carrot Project and the Franklin County CDC (FCCDC) are thrilled with this new partnership, which will provide a greater number of farmers and food business owners across the state with access to financing. "This is a wonderful opportunity to pair the Carrot Project's 10 years of agricultural expertise with FCCDC's lending capacity and food business experience to serve the entire Commonwealth," explains Dorothy Suput, The Carrot Project's Founder & Executive Director. "We are grateful to the MSPA for helping us get this off the ground." John Waite, Executive Director of the FCCDC, adds that "our combined approach to financing and adding value through business assistance can now serve farm and food enterprises across the State. We have more than 30 years of small business lending experience, so this partnership makes sense and offers business assistance and capital to more people."

This statewide loan fund is made possible by the generous contribution of the Massachusetts Society for Promoting Agriculture to guarantee the loans. MSPA is the second oldest agricultural society in America, founded by an act of the Great and General Court in 1792. MSPA President John Lee describes the initiation of the loan fund as "a wonderful way to leverage the strengths of both The Carrot Project and the Society to the benefit of our local MA famers and related agricultural entrepreneurs. Adding value to enterprises will go a long way to preserving a thriving agriculture sector across the State."

The loan fund is available to any and all farm and food enterprises located in Massachusetts that engage in the cultivation of farm, forest or aquatic products, or in the processing of such locally produced products. Businesses can be urban or rural, and located anywhere within the state. The fund can service loans up to \$50,000, and can be used for capital and operating expenses. For more details, please visit <http://thecarrotproject.org/financing/Massachusetts>. If you would like more information about the loan programs, please contact Dorothy Suput at dsuput@thecarrotproject.org.

(Source: MDAR October/November Farm and Market Report, Oct. 7, 2016)

UPCOMING MEETINGS:

- October 16, 2016** - *Basic Tractor Skills for Aspiring Young Women Farmers*. 8:30am – 3:30pm. Cerridwen Farm, Green Mountain College, 436 Grandville, Poultney, VT. \$25 Click [here](#) for more information or to register.
- October 26, 2016** – *UMass Extension Food Safety Workshop – Product Development: Beyond the Concept*. 9:00 – 5:00. Commonwealth Kitchen, 196 Quincy St. Dorchester, MA. Cost: \$200. In partnership with the regional processing centers in Massachusetts, this 1-day, content-filled course will have food safety and product development information needed to successfully launch a new food product. For more information and to register, go to: <https://www.eventbrite.com/e/product-development-considerations-beyond-the-concept-oct-2016-tickets-27707895060>.
- November 1, 2016** – *Maine Course Scaling Up Event*, 10:00 – 3:30. Abromson Center at Univ. of Southern Maine, Portland ME. Co sponsored by University of Maine and Sodexo, Inc. For more information and to register contact The Maine Course Director, at [207.298.2149](tel:207.298.2149) or maeve.mcinnis@sodexo.com or go to: <https://mainecoursebysodexo.com/2016/09/23/register-for-the-scaling-up-events/>.
- November 2, 2016** - *Managing Phosphorus in Organic Residuals Applied to Soils* 8:45-4pm. Holiday Inn, 265 Lakeside Ave. Marlborough, MA 01752. Approval has been requested for the following professional certifications: CGCS, CSFM, MCH, MCLP, and AOLCP. For more information contact: Kelly Kraemer, 413-545-5221, kkraemer@umass.edu or visit: <https://www.regonline.com/phosphorus>
- November 3, 2016** – *Maine Course Scaling Up Event*, 10:00 – 3:30. Wells Conference Center, University of Maine, Orono. Cosponsored by University of Maine and Sodexo Inc. For more information and to register contact The Maine Course Director, at [207.298.2149](tel:207.298.2149) or maeve.mcinnis@sodexo.com or go to: <https://mainecoursebysodexo.com/2016/09/23/register-for-the-scaling-up-events/>.
- November 4, 2016** – *2016 MA Farm & Seas to School Conference*. Double Tree Hotel, Leominster, MA. For more information or to register, go to: <http://www.massfarmtoschool.org/conference/>.
- November 7-9, 2016** – *2016 Southeast Strawberry Expo*, Hilton North Raleigh/Midtown, Raleigh NC. For more information or to register, go to: <http://ncstrawberry.com/>.
- November 9, 2016** – *UMass Extension Food Safety Workshop – Product Development: Beyond the Concept*. 9:00 – 5:00. Franklin County CDC, Western MA Food Processing Center, 324 Wells St. Greenfield, MA . Cost: \$200. In partnership with the regional processing centers in Massachusetts, this 1-day, content-filled course will have food safety and product development information needed to successfully launch a new food product. For more information and to register, go to: <https://app.etapestry.com/onlineforms/FranklinCountyCommunityDevelo/ProdDevCourse.html>
- November 9-10, 2016** - *Northeast Greenhouse Conference & Expo*. Holiday Inn, Boxborough MA For more information and to register see www.negreenhouse.org or contact: Delaney Meeting & Events, 802-865-5202.
- November 15-18, 2016** – *Better Process Control School*. 243 Chenoweth Laboratory- Conference Room, UMass, Amherst, MA. This course will train food processors principles of acidification, and container closure evaluation programs for low-acid and acidified canned foods as required by FDA regulations in CFR 108, 113 and 114. The purpose of these regulations is to help ensure the safety of consumers by training producers. This course will satisfy both USDA and FDA requirements. For more information see: <http://ag.umass.edu/events/better-process-control-school-umass-amherst-campus-amherst-ma-november-15-18-2016>.
- November 17, 2016** – *Growing in Tunnels Conference*. Tolland County Extension Center, Vernon CT. For more information contact MacKenzie.White@uconn.edu, 860-875-3331.
- December 4-5, 2016** – *North American Berry Conference*. DeVos Place Convention Center and the Amway Grand Plaza Hotel, Grand Rapids, MI. For more information and to register, go to: <https://www.regonline.com/registration/Checkin.aspx?EventID=1886571>
- December 6-8, 2016** – *Great Lakes Fruit & Vegetable Expo*. DeVos Place Convention Center and the Amway Grand Plaza Hotel, Grand Rapids, MI. For the full program and registration information, go to: <http://www.glexpo.com/> .

Massachusetts Berry Notes is a publication of the UMass Extension Fruit Program, which provides research based information on integrated management of soils, crops, pests and marketing on Massachusetts Farms. No product endorsements of products mentioned in this newsletter over like products are intended or implied. UMass Extension is an equal opportunity provider and employer, United States Department of Agriculture cooperating. Contact your local Extension office for information on disability accommodations or the UMass Extension Director if you have complaints related to discrimination, 413-545-4800