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Berry Notes

Prepared by the University of Massachusetts Fruit Team

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UPCOMING MEETINGS

Strawberry fields remain quiet at this time of year. Dayneutral varieties may still be fruiting but are winding down. Late summer and early fall is a good time to fertilize both new and established strawberry fields. Typically strawberries will need 20 – 50 pounds of nitrogen at this time of year. Amounts depend on how much was applied at renovation and the organic matter content of the soil. Evaluate established fields for the foliar diseases or other problems that could carry over to next year. Also scout fields for weed problems that can be addressed in the fall. **Highbush Blueberry** harvest is done. Survey fields for weak bushes and determine whether or not Blueberry Stunt or Scorch may be the cause. Only non- nitrogen fertilizer applications should be made this late in the season if leaf tissue tests indicate deficiency. Scout fields for weeds to prepare for late season management strategies. **Summer raspberry** harvest is long over but be on the lookout for late leaf rust. Look for Orange Rust on black raspberries and blackberries, too. **Fall raspberries** are still producing, but many are infested with Spotted Wind Drosophila (see more on this below). Botrytis fruit rot is also a threat. Also check for and clean up mites and leafhopper damage. **Grapes** are being harvested. SWD is also a serious threat in this crop, both table and wine grapes are being infested.

New England Vegetable & Fruit Conference – 2013: Mark your calendars or go now to www.newenglandvfc.org to check out the program and register. Hotel reservations should be made early as the rooms often sell out.

NEVFC
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Sponsored by the New England Vegetable & Berry Growers Association and the Massachusetts Fruit Growers Association in conjunction with the Universities of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, as well as Cornell University, Maine Organic Farmers and Gardeners Association and the Connecticut Agricultural Experiment Station – in cooperation with the U.S. Department of Agriculture

ENVIRONMENTAL DATA

The following growing-degree-day (GDD) and precipitation data was collected for an approximately two week period, August 22 through August September 4. Soil temperature and phenological indicators were observed on or about September 4. Total accumulated GDDs represent the heating units above a 50° F baseline temperature collected via our instruments for the 2013 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	2012 Growing Degree Days		Soil Temp (°F at 4" depth)	Precipitation (1-week gain)
	2-week gain	Total accumulation for 2013		
Cape Cod	258	2,379	72°	4.15"
Southeast	268	2,124	72°	2.82"
East	299	2,414	76°	1.88"
Metro West	235	2,247	69°	0.47"
Central	259	2,303	60°	1.27"
Pioneer Valley	299	2,382	73°	1.75"
Berkshires	259	2,050	60°	4.05"
Average	268	2,267	70°	2.13"

(Source: UMass Landscape Message #20, Sept. 6, 2013)

STRAWBERRY

Strawberry Fall Check-List

Sonia Schloemann, UMass Extension

√ **General:** Flower bud initiation deep in the crown of the plants is happening now, determining next years' yield. So, maintaining good plant health into the fall is important. In addition to keeping up with the fertilizer program, suppressing leaf diseases improves the ability of the plant to carry on photosynthesis and store starch in the crowns. Don't let leaf spot or powdery mildew get ahead of you. Narrow the rows to about 12" and cultivate the alleys in fruiting fields and new plantings for the last time before mulching. Plant winter rye in plowed down fields as soon as possible in order to get good establishment and growth before winter.

√ **Nutrition:** Nitrogen fertilizer should be applied to bearing beds in early September to bring your seasonal total up to 100-120 lbs/acre. Most growers apply about 70-80 lbs of nitrogen on at renovation. The fall application should provide another 30-50 lbs (more on soils with low organic matter content). This stimulates good root growth in the fall and supplies nitrogen needed for flower bud initiation. New fields need to have a total of 80 - 100 lbs/acre of nitrogen with about 40 lbs applied in the fall. Ammonium nitrate (35% N) is a good fertilizer for the fall application. If your leaf tissue analysis shows deficiencies in magnesium or boron, early fall is a good time for foliar applications of Epsom salts (15lbs/100gal/acre) for magnesium and Solubor

(3lbs/100gal/acre) for boron. Don't make these applications on hot humid days, however, or phytotoxicity could result. Read the labels.

√ **Weeds:** Weed management in the early fall is limited to cultivation and hand weeding/hoeing. The only herbicides you should consider using are Poast or Select Max for controlling grasses postemergence. These will only work on relatively small grasses. Big clumps of crabgrass will have to be pulled by hand. However, quackgrass can be knocked down by cultivation or mowing and then treated when new growth is less than 6" high. One note of caution; Poast, which is used with a crop oil surfactant, can injure strawberry foliage in cold weather. I would recommend its use as a spot treatment at this time of year rather than a broadcast treatment of the whole field. Chateau can be applied as a preemergence material to row middles to control broadleaf weeds in the fall, but should not be allowed to contact strawberry foliage. Weed management later in the fall can include applications of preemergent materials such as Devrinol, Ultra Blazer, Prowl H20, Spartan and Sinbar.

√ **Diseases:** Clean up severe infections of leaf spot and powdery mildew. Rally, Cabrio and Pristine may be good materials for this use. Organic options for leaf spots include copper products such as Nu Cop 50WP but consult label for sensitive cultivars. Organic options for

powdery mildew include Oxidate, JMS Stylet Oil, potassium bicarbonate products and sulfur products (again, consult label for cautions on sensitive cultivars). Healthy leaves are important at this time of year to supply the plant with the energy to produce flower buds for next year's crop and to store energy in the roots for the first flush of growth next spring. Apply Ridomil Gold, Alliette Prophyt or Phostrol in September or early October in areas where Red Stele has been identified. Organic growers can use Actinovate AG but this is best used prior to disease onset. It is best to apply these materials when

the soil is beginning to cool but before heavy fall rains begin. This should not be considered an alternative to good site selection for strawberries.

√ **Insects:** Check fields for infestations of leafhopper, mites or aphids. Generally, plants can take a fair amount of feeding by these insects, but heavy infestations can be a problem. And, aphids in particular, can vector virus especially when they are in the winged form and can disperse and should not be allowed to build up disperse to other fields. **Dayneutral fields should continue to be treated for spotted wing drosophila until harvest ends.**

Growing Strawberries in Greenhouses

Adam Dale, Ontario University of Guelph, Ontario

Strawberries are grown in greenhouses in many parts of the world. In Europe they have been grown successfully since the early 1970's and farmers can get more than 120 tonnes/hectare/per year. In China, there are over 24,000 hectares of strawberries grown over the winter in energy-saving greenhouses which rely mostly on solar energy to heat the greenhouses. However, few strawberries are grown in greenhouses in North America.

The production techniques are well known and the technology easily imported. In Europe most plants are grown in bags of potting mixes supported on structures 1.5-2 m above the ground, irrigated and fertilized through irrigation system. The flowers are pollinated by bumble bees, although they have to be restricted so that they do not destroy the flowers.

Now with dayneutral strawberries it is possible to have plants fruit continually throughout twelve months of the year. Dayneutral strawberries initiate flower buds below 25°C in any daylength and will flower without a dormant period. Consequently, they can fruit consistently from two months after they were planted.

Recently we have found fruit develops best when the mean daily temperatures are between 14-18°C. In our climate, this happens rarely. Usually we are either cooler or hotter than this, which means that greenhouses would need to be either heated or cooled. Both are expensive operations.

Over the last 30 years, I have consistently had three-four enquiries per year about how to grow strawberries in greenhouses. I have seen operations start and discontinue, but none have stood the test of time. So why is this?

There are three reasons why strawberries are not grown in greenhouses in Ontario: the wide range of temperatures between summer and winter which reduce yields, it takes

about three years to learn how to grow strawberries in greenhouses effectively, and in most areas it is not economically feasible.

A simple calculation will show the poor economic feasibility. In northern Europe, growers consistently harvest 120 T/ha per year, one hectare is 10,000 m² which gives a yield of 12kg/m² or 2.64lbs/ft² per year. In Ontario, on average imported strawberries are priced at about \$1.25/lb to the farmer, and Ontario berries have a slight premium at about \$1.60/lb. So the average return to the farmer of will be about \$4.20/ft². Greenhouse vegetable growers traditionally received \$8/ft² or more for their produce, and cost would be fairly similar.

However, even though it is uneconomic to grow strawberries in greenhouses for wholesale markets, there is a possibility in niche markets. If a farmer had a market where they would receive \$3/lb, this would be competitive with greenhouse vegetables. These would be in local farm markets. Also, the location would need to be geographically where the summer nights remained cool and the days were not too hot, i.e. northern Ontario.

So, at the present time, although strawberries can grow well in greenhouses, it is not economically feasible in most of the Province. However, a small greenhouse in a niche market in more northerly regions could be economically sustainable. (*Source: Ontario Berry Grower, Vol. 5, Sept. 2013*)

RASPBERRIES/BLACKBERRIES

Raspberry Fall Check List

Sonia Schloemann, UMass Extension

√ **General:** Encourage hardening off of canes in summer bearing varieties of red and black raspberries and blackberries by avoiding nitrogen fertilizers and supplemental watering at this time. Fall bearing raspberries can still benefit from irrigation in dry weather to help maintain fruit size.

√ **Nutrition:** Based on soil and tissue test results, apply non-nitrogen containing fertilizers and lime as needed. For example, Sul-Po-Mag or Epsom Salts can be applied now so that fall rains can help wash it into the root zone for the plants.

√ **Weeds:** Now is a good time to do a weed survey and map of problem areas, so that you can use this information to develop an effective management strategy. A late fall application of Casoron®, Devrinol®, Surflan®, or Princep® for preemergent control of broadleaf weeds next spring should be made. Apply Casoron® only when temperatures are below 40°F, preferably just before rain or snow. Most of these materials should only be used on established plantings, not newly planted fields. See the *New England Small Fruit Pest Management Guide* for more specific information.

√ **Diseases:** Fall bearing raspberries can suffer fruit rot problems due to increased moisture present in the planting (more frequent precipitation, longer dew retention, longer nights) late in the growing season. The majority of this fruit-rot is *Botrytis cinerea*, gray mold. Captan 80 WDG is labeled for use on brambles. In addition Elevate®,

Switch®, Pristine® and Rovral® are materials available for this use. Frequent harvesting and cull-harvesting are the best practices for keeping fruit rot levels low. Thinning canes in dense plantings can also help. Scout summer bearing brambles to look for powdery mildew and treat if necessary. See the *New England Small Fruit Pest Management Guide* for recommended materials and rates. If Phytophthora root rot has been identified in a field, treat the affected area with Ridomil Gold®, Alliette®, or Phostrol® in September or early October. This timing is important to get the material in place in the root zone before the onset of cool wet weather (and soil) in the fall.

√ **Insects:** Now is the time to check plantings for crown borers. Adults of this pest look like very large yellowjacket, but is actually a moth. They are active in the field in August and September laying eggs. Scout the fields for crown borer damage by looking for wilting canes. This symptom can also indicate Phytophthora root rot, so when you find a plant with a wilting cane (or two), dig up the plant and check the roots for brick red discoloration in the core of the roots (phytophthora) or the presence of a crown borer larvae in the crown. Rogue out infested crowns and eliminate wild bramble near the planting, since they will harbor more of this pest. **Fall bearing fields should continue to be treated for spotted wing drosophila until harvest ends.**

'Prime-Ark® Freedom' Primocane-Fruiting Thornless Blackberry

University of Arkansas Division of Agriculture

Type - Primocane-fruiting; thornless; erect.

Date of Release - 2013 plant patent to be applied for.

Fruit Size - Fruits of 'Prime-Ark® Freedom' are very large, with floricanes averaging 9 g in Arkansas and slightly less for primocane fruits. This is larger than even 'Natchez' berries in Arkansas. In California fruits weighed as much as 16 g for primocane fruits.

Flavor/Sweetness - Average soluble solids (a measurement of sweetness) of 'Prime-Ark® Freedom' was 10.4%, slightly lower than 'Prime-Ark® 45' (11.4%) and similar to 'Natchez'. Flavor ratings for 'Prime-Ark®



'Freedom' were the same as for 'Prime-Ark® 45', and higher than 'Natchez', but lower than 'Ouachita' and 'Osage'.

Yield - Floricane fruit yields have been comparable to 'Prime-Ark® 45', and can range near that of 'Osage' and 'Ouachita'. In Arkansas primocane fruit yields have been very low for all primocane-fruiting genotypes due to very high summer temperatures. In limited evaluations in coastal California trials, substantial promise for primocane crops appears for 'Prime-Ark® Freedom' as it looks comparable to 'Prime-Ark® 45' in very early trials.

Maturity Date - Floricane first harvest date is very early, up to 9-11 days earlier than the early ripening 'Natchez', and 16-18 days before 'Ouachita'. Primocane first ripe fruit date has been difficult to fully determine for 'Prime-Ark® Freedom' in Arkansas. Observations indicated that first ripe fruit was 18-20 of July on tipped primocanes at FRS although fruit amount was limited, and ripened earlier than an average date reported for 'Prime-Ark® 45' of 8 Aug. In California, 'Prime-Ark® Freedom' began harvest approximately 10-15 Aug. with harvest extending into early October, an earlier ripening date than 'Prime-Ark® 45' of late August to early September.



Disease Resistance - No orange rust observed and only slight anthracnose observed. No information available concerning resistance to double blossom/rosette.

Comments - 'Prime-Ark® Freedom' is the world's first primocane-fruiting and thornless commercial blackberry

introduction. It is intended primarily as a home garden or local-market plant. It has very large fruits with good flavor, and is very early ripening on floricanes, the earliest of all Arkansas blackberry varieties. Fruit of 'Prime-Ark® Freedom' does not exhibit exceptional postharvest storage potential however, and is not recommended for the shipping market. It is very erect, similar to 'Ouachita' and more erect than 'Natchez.' In Arkansas it has been rated as having good but not excessive vigor while in California was observed

to be very vigorous. The very early bloom dates could indicate lower chilling requirements, but this has not been confirmed due to the evaluation site in Arkansas being a high-chill location.

(Source: TeamRubus Blogspot Sept 1, 2013 @ http://teamrubus.blogspot.com/2013_09_01_archive.html)

BLUEBERRY

Highbush Blueberry Fall Check-List

Sonia Schloemann, UMass Extension

√ **General:** Blueberry plants should be encouraged to harden off for the winter. This means no nitrogen fertilizer at this time. Flag bushes that show premature reddening of leaves compared to others of the same variety. This can be an indicator of infection with virus or other pathogens. If you haven't done it already, make some notes on observations from this year that might be helpful in coming years (e.g., variety performance, sections of the field that did well or poorly, how well some practices worked, or didn't, etc.). Relying on memory isn't always accurate enough. Nothing can replace a detailed field history when trying to diagnose problems.

√ **Nutrition:** Hold off on any nitrogen fertilizers. Based on leaf tissue tests and soil tests, sulfur, lime, and some fertilizers can be added now. Apply these before fall rains begin and also before adding any supplemental mulch to the plants.

√ **Weeds:** As with other small fruit crops, now is a good time to do a weed survey and map the weed problems in your planting. This information will be very useful in tailoring your weed management plan so that is effective and not wasteful. A late fall application of Casoron® for preemergent control of broadleaf weeds next spring should be made only when temperatures are below 40°F, preferably just before rain or snow. Devrinol®, Surflan®,

and Kerb® may also be used in the fall according to label recommendations. See the *New England Small Fruit Pest Management Guide* for more specific information.

√ **Diseases:** Weak plants can easily be detected at this time of year because they tend to turn red earlier than healthy bushes. Upon finding weakened bushes, try to determine the reason for weakness. Is the root system damaged? If so, is it likely from disease infection or root damage by voles or grubs? If the roots are healthy, could a crown borer (Dogwood borer) be the culprit? Or is stunt disease the cause? Or Scorch? Accurate diagnosis is the first step in resolving the problem and avoiding spread. Enlist the help of specialists if you have trouble determining the cause of problems. See factsheet on Blueberry Scorch at www.umass.edu/fruitadvisor for help diagnosing this disease.

√ **Insects:** The main worry now is for sharp-nosed leafhopper which is the vector for stunt disease. If you have determined that you have bushes infected with stunt disease in your planting, an application of malathion to the infected bushes and any immediately surrounding bushes should be made to control leafhoppers BEFORE removing the infected bushes. Failing to do this will likely cause the spread of the disease to clean bushes even after infected bushes have been removed. In eastern areas of the state, growers are concerned about infestations of

WinterMoth. Go to <http://www.umassgreeninfo.org/factsheets/defoliators> for more information on this new pest. For now, growers should know that any moths seen flying in their plantings

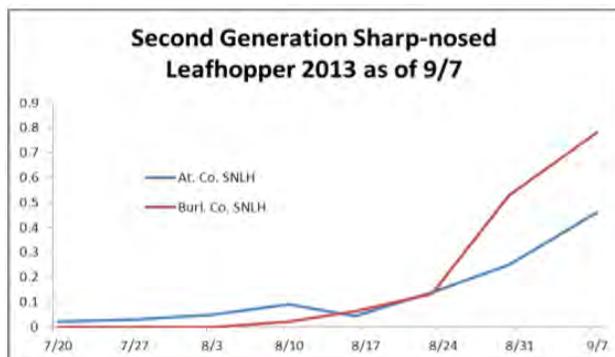
now are NOT Winter Moth or Canker Worm moths. These moths do not emerge and begin flight until November.

Sharp-nosed Leafhopper (SNLH)

Cesar Rodrigues-Saona, Dean Polk, Gene Rizio, Rutgers University

The second flight of SNLH has been slow to develop this year, but trap counts have increased over the last couple of weeks. Remember, there are 2 generations per year. One of the reasons we are concerned with the adults, is that it is the adult stage that can fly and therefore more easily transmit stunt disease from infected bushes to ‘clean’ bushes.

While wild and abandoned bushes play a role as alternate hosts; the farms where SNLH are present in any significant levels, or $\geq 1/\text{trap}$, are those farms that traditionally have moderate to high weed pressure each season. Our observations also indicate that second generation SNLH populations often show up in mid August and can stretch into October in weedy fields; whereas SNLH may not show up until mid September in clean fields. In any case, we are now in an upward trend with more adults maturing and moving around fields. Therefore it is an appropriate time to treat.



Life cycle – SNLH feeds and reproduce on blueberry, huckleberry, cranberry, and other related plants. SNLH feeding causes little direct damage but it transmits the phytoplasma that causes **stunt disease** in blueberries. They are small brown insects with a pointed head (Figure 1). SNLH picks up the disease while feeding on infested bushes and carries it to other plants in subsequent feedings. Usually only adults will carry the disease from plant to plant, since nymphs are wingless and can't fly (Figure 2). This insect completes two generations in New Jersey. Adults are abundant in the woods, where many alternative hosts are present, and may move to commercial blueberry fields in the spring. Eggs overwinter inside fallen leaves and hatch in mid-May. Nymphs complete 5 instars. Nymphs from the first generation reach adult stage in mid-June, while nymphs from the second generation reach adulthood in early August. Adults move back to the woods in the fall.

Monitoring these generations is critical for timing of control strategies.

Monitoring and control – This insect is the ONLY regular target for post harvest sprays. Adults can be monitored using yellow sticky traps. First generation SNLH is often controlled with sprays targeted for plum curculio, aphids, and cranberry fruitworm. Treatment decisions for the 2nd generation should be based on individual population levels, as well as any history of stunt disease on your farm. Because adults migrate from woods, monitoring



Figure 1. Sharp-nosed leafhopper adult top view and adult side view. Notice the mottling on the wings and the sharp point of the head.

should be intensified in, and sprays should be directed to, the perimeter of fields to control migrants carrying the disease. Insecticides are usually applied just prior to peak flight, which will probably be sometime near the end of August to early September (this time of year).



Figure 2. Sharp-nosed leafhopper nymph (wings not present) vs. adult.

Note that Burlington County farms often have higher populations of SNLH than farms in Atlantic County. In Burlington County with high SNLH populations, treatments may be needed by the middle of the month, and possibly again during the first half of September. If you are in Atlantic County, or have low SNLH populations, then 1 application should be applied late August to early September, if needed. We recommend use of Assail 30SG @ 3-5 oz, Actara @ 3-4 fl oz, Admire Pro

@ 1-1.4 fl oz, Lannate LV @ 1.5 pt, or Malathion LV @ 10 oz per acre. It is also important to remove all plants that show symptoms of stunt disease. Removal of bushes should be done after insecticide treatment to avoid movement of leafhoppers from infested to healthy plants, thereby facilitating spread of the disease. (*Source: The Blueberry Bulletin, Vol. 24, No. 21, Sept. 12, 2013*)

GRAPE

Late-Season Control Of Powdery Mildew In Grapes: Focus On Inoculum Management

Annemiek Schilder, Michigan State University

Powdery mildew colonies are starting to become more apparent on grape leaves in a number of vineyards. While dry weather is generally considered favorable for powdery mildew, the heat and high solar radiation of the 2012 growing season have actually been detrimental to powdery mildew development. Temperatures of 95 degrees Fahrenheit and above are lethal to powdery mildew colonies. In this case, the temperature of the leaf surface is the most important to consider as this represents the immediate environment to which the powdery mildew colony is exposed. Leaf temperatures can be considerably higher than the surrounding air during sunny days.

At this time of year, the focus of powdery mildew management should be on reducing inoculum production for next year, which typically peaks in mid-September. Eradicant sprays are best applied to visible colonies in early September.

a vineyard during the growing season, there is a window during which cleistothecium production can be nipped in the bud as most cleistothecia are produced in the first half of September in Michigan. Conversely, even if you had decent control of powdery mildew during the growing season, putting the sprayer away soon can allow the fungus to make a late comeback and still produce considerable numbers of cleistothecia before the leaves fall off. Lower numbers of cleistothecia going into the winter result in a delay in the onset of powdery mildew epidemics and overall lower



Recently observed powdery mildew infection on grape leaves. Photo credit: Annemiek Schilder, MSU

The most common approach to grapevine powdery mildew management is to apply preventative fungicide sprays. A more sustainable and cost-effective management approach is to aggressively protect the fruit during its most susceptible period (from bloom until five to six weeks after bloom) and then take a more relaxed approach to protecting the foliage in order to keep the leaves functional during fruit ripening. Frequent scouting will be needed as well as eradicative sprays once powdery mildew colonies start to appear.

At this time of year, the focus of powdery mildew management should be on reducing inoculum production for next year. In August and September, the fungus switches to producing overwintering structures called cleistothecia. They can be seen as small, yellow, brown and black specks on the surface of the powdery mildew colonies. Even if substantial powdery mildew occurred in



Powdery mildew colonies. Photo credit: Annemiek Schilder, MSU

disease pressure the following season.

While we have many effective fungicides for preventative and curative control of powdery mildew in grapes, not many fungicides can eradicate existing colonies. In fact, spraying systemic fungicides on raging infections is not very effective and can encourage fungicide resistance development. At most you can expect to suppress sporulation while you keep new infections from taking place on healthy tissues. Small plot efficacy trials in grapes have shown that JMS Stylet Oil, Sulfurix and Kaligreen have good eradicative properties and can reduce the number of visible colonies (see graphs). To

reduce the number of cleistothecia, Sulforix, Elite and Kaligreen appeared most effective (Elite did not eliminate existing infections, but prevented new infections). Do not apply Sulforix on sulfur-sensitive varieties or close to harvest, as sulfide residues may interfere with the fermentation process. More than two applications of Stylet Oil are thought to suppress brix accumulation but we are evaluating this premise in Michigan in 2012.



Powdery mildew cleistothecia on vein of grape leaf. Photo credit: Laura Miles

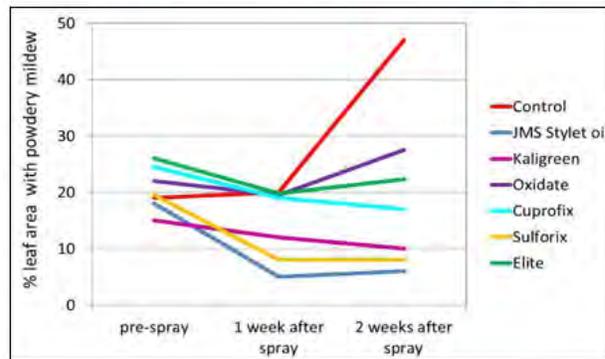
A few things to remember when applying eradicated sprays.

- Apply treatments as soon as possible after symptoms are seen (regular and careful scouting is important).
- For cleistothecia prevention, apply an effective eradicator on visible powdery mildew colonies between now and early September.
- Ensure thorough coverage of leaves and bunches, which means increasing spray volume (50 to 100 gal/acre), driving slower and spraying every row.
- Since coverage is so important, waiting a little longer to ensure good spray conditions is better than spraying immediately under poor spray conditions.

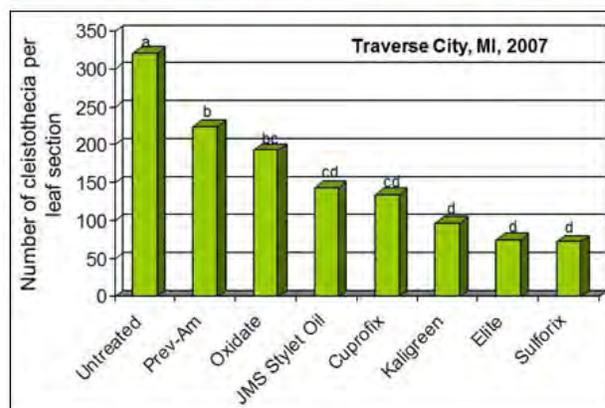
If needed, ensure forward protection of healthy plant parts by including fungicides with good protective activity in

the spray mixture. Fungicides that have broad-spectrum activity can also protect against late season downy mildew and Botrytis bunch rot development.

Effect of post-infection (Sept. 19) fungicide spray on powdery mildew severity on Pinot noir leaves in Traverse City, Mich.



Effect of a single post-infection spray on cleistothecium formation



- Always read the label for the pre-harvest and restricted entry intervals, incompatibility with other products, and other restrictions.
- Scout again to see if your treatment was effective.

(Source: Michigan Fruit Crop Advisory, Sept. 4, 2012)

Grape Ripening

Bruce Bordelon, Purdue Univ.

Grapes have reached veraison and begun the ripening process. Harvest of early wine grape varieties has begun in the southern part of the state. As harvest nears, it is very important to monitor grape chemistry. Growers should sample weekly leading up harvest with a protocol to collect a representative sample of fruit from the entire vineyard.

Fruit quality is comprised of several factors, the most important of which are sugars, organic acids, and pH.

Other factors such as phenolics and anthocyanins, terpenes and other aroma and flavor compounds can be very important to wine quality as well. And of course, freedom from rots is an important consideration. Unlike some other fruits, grapes do not continue to ripen after harvest. Consequently, it is important to harvest grapes at

the peak of quality and with the desired parameters for the intended use.

Wine grape growers should have the ability of measure sugars (with a refractometer), titratable acidity and pH (with a pH meter and burette). Equipment and supplies to measure these parameters can be purchased for about \$500. Each of these factors is important for determining proper harvest time, but none alone can accurately estimate overall fruit quality. It is the balance of sugars, acids and juice pH that is important to the wine maker. And of course, there are the subjective qualities of seed and skin maturity, tannins, anthocyanins, flavors, aromas, etc. The Berry Sensory Analysis method addresses evaluation of these more subjective factors such as skin, pulp and seed maturity. More needs to be done to adapt the method for use with our Midwest varieties, but as a descriptive tool, it can be an excellent way for growers to go beyond the basics of sugar, acid and pH.

With wine grapes, all fruit of a given cultivar is typically harvested from the vineyard or block at a single time to coordinate winery activity and to reduce costs. It is

important to plan carefully so that the harvest date coincides with the optimum fruit quality. Most vineyards have some degree of variability in soil type and drainage, sunlight exposure, wind, insect and disease pest, nutritional status, etc. These variations can result in large differences in fruit ripeness and quality. Fruit from adjacent vines as well as from different parts of the same vine can vary. Differences are caused by variation in crop load (pounds of fruit/vine size), cluster position, shoot vigor, degree of sun exposure, and so on. Much of the variability can be reduced with proper vineyard management. A pre-harvest walk through the vineyard block should identify any clusters lagging in ripeness. In most cases, those clusters will never catch up to the rest and will only reduce the overall quality of the crop at harvest. Now is a good time to drop any undesirable fruit. Don't expect your harvest crew to sort as they pick. Go through beforehand and eliminate the guesswork. (*Source: Facts for Fancy Fruit, Vol 13, No. 8, August 29, 2013*)

GENERAL INFORMATION

Funding Opportunity for Growers from Northeast SARE

Tina Smith, UMass Extension



Have you ever had a great idea for a better way to grow a crop or an unusual crop, market a product, or engage members of your community in strengthening local agriculture? Would a little more time (or money) help you to

follow up on that idea? If so, then check out the farmer/grower grants offered by the Northeast Sustainable Agriculture Research and Education program (NE-SARE). In a nutshell, the goal of this program is to provide funding to help farmers with a good idea to figure out if it works.

In a farmer/grower grant proposal you can request funds to pay yourself or employees for time spent on the project, or to buy materials or rent equipment needed for the project. Travel expenses, telephone, postage, and services like soil testing or consulting are also fundable if directly related to the project. However, these grants will not pay for normal operating expenses, or for capital expenses like buying land, greenhouses, equipment, or improvements to buildings.

Farmer/grower grants are intended to generate information that other growers can use. They are not meant to help an individual grower develop something solely for their own benefit. After testing their ideas, growers are required to share the results. Funding is

available for this 'outreach' portion of a farmer's project, too. It doesn't have to be fancy – in most cases we're talking about a field day, a newsletter article, or a presentation at a grower meeting. Extension personnel are happy to work with you on such things.

To apply for funding, you have to be a farmer in the Northeast Region. You don't have to be a full-time grower, but your operation must be engaged in commercial agriculture and sell product(s) on a regular basis.

Unlike most grant applications, this one is short and sweet. There's no need for a lengthy literature review, and no requirement to submit 20 copies of the proposal. You just have to provide well-thought out answers to 6 simple questions. 1) What do you want to do? 2) How will your project fit in with your farm operation? 3) What will your methods be? 4) How will you measure your results? 5) How will the results of your project help growers in the Northeast? And 6) What is your outreach plan? You'll also need to fill in the one-page budget sheet to show exactly what you will use the money for.

The cap on any single farmer grant is \$15,000. Each year, SARE awards about \$250,000 for up to 30 Farmer Grants. Awards range from \$2,500 to the \$15,000 maximum.

Proposals are reviewed by a team of farmers, researchers, extension agents and other agricultural service providers who select the best projects for funding.

There is a detailed guide for applicants on the Northeast SARE web site. See: <http://www.nesare.org/Grants/Get-a-Grant/Farmer-Grant>

Follow-up questions can be emailed to Carol.Delaney@uvm.edu or call 802-656-0697. Massachusetts coordinator for SARE is Sonia Schloemann, Department of Plant, Soil & Insect Sciences, 208 Bowditch Hall, UMass, Amherst, MA 01003, Email: sgs@umext.umass.edu

You can see a listing of all previous grants by clicking on 'funded projects' at www.sare.org/. Below are some of the projects that were funded this past year.

- [Pennsylvania queen bee improvement program: Sharing the best](#) - Jeffrey Berta, Always Summer Herbs .com, LLC, Slippery Rock PA
- [Breeding program for novel disease-resistant cider apple cultivars](#) - Jonathan Carr, Carr's Ciderhouse, Hadley MA
- [Emergency control of spotted-wing Drosophila in fall raspberries](#) - Bart Colucci, Meadowview Farm, New Paltz NY
- [Increasing body heat in dairy goat kids born during cold New York winters](#) - Catherine Conhiser-Andera, Moo Valley Farms, LLC, Great Valley NY
- [Hay net/plastic sleeve](#) - Lonnie Fast, Fast Farms, Fairmont WV
- [Black soldier flies as a sustainable feed alternative for aquaculture](#) - Allan Gandelman, Main Street Farms, LLC, Homer NY
- [Using compost hear for perennial production](#) - Pat Gianunzio, Petal Pushers Farm, Laconia NH

- [Martha's Vineyard fibershed project](#) - Rebecca Gilbert, Native Earth Teaching Farm, Chilmark MA
- [Improving seed quality of Northeast-grown seed: Focus on disease](#) - Ken Greene, Hudson Valley Seed Library, Accord NY
- [Methods to control biofouling of cultured eastern oysters by the tube-building polychate worm](#) - Elizabeth Haskin, Betsy's Cape Shore Salts, Cape May Court House NJ
- [Investigating ways to improve native pollinator floral resources](#) - John Hayden, The Farm Between, Jeffersonville VT
- [Allium white rot biostimulation project](#) - Amy LeBlanc, Whitehill Farm, East Wilton ME
- [Enhancing the growth rate and well-being of pigs raised on pasture](#) - Pete Lowy, Pete and Jen's Backyard Birds, Sudbury MA
- [Evaluation of exclusion and mass trapping as cultural controls of spotted-wing Drosophila](#) - Lawrie Nickerson, Hay Berry Farm, Hoosick Falls NY
- [Incorporating buckwheat into oat/pea hay](#) - John O'Meara, O'Meara Family Farm, New Sweden ME
- [Economic analysis of oyster mushroom production in an unused poultry house](#) - Ram Sagram, Sagram Oyster Mushroom Farm, Seaford DE
- [Experimental hybrid top bar hive](#) - Anais Salles, Growing for Food, Philadelphia PA
- [Beef cooperative](#) - Sarah Teale, Burchland Farm, Granville NY
- [Exploring low-tech food dehydration to increase profits on small farms](#) - Tanya Tolchin, Jug Bay Market Garden, Upper Marlboro MD
- [Sugar kelp and triploid oyster production to promote sustainable aquaculture](#) - Daniel Ward, Ward Aquafarms, East Falmouth MA

Note: Proposal deadlines in 2013 are in December 2nd with awards announced in March

Fall Soil Testing And Nutrient Management

Katie Campbell-Nelson, UMass Extension

The UMass Soil and Plant Tissue Testing lab has made some major changes between 2011 and 2013 to improve our soil and tissue testing process. The lab has hired a new analytical chemist, Solomon Kariuki. He is a wizard with instrumentation, has fine-tuned the accuracy of results, and built in programs that automatically check for precision. The purchase of 2 drying ovens for soil and plant tissue, a water filtration system, and a second inductively coupled plasma instrument (ICP) for research samples have allowed the lab to run more samples, improve turnaround time and produce more accurate results. The new Lachat Flow Injection Analyzer specifically provides more accurate readings of soil available

Phosphorous (P) and has helped the lab give soil amendment recommendations based on recent nutrient regulations that require reduced P applications. You may have noticed the lab has also implemented a new report generating system for soil tests that is designed to help the users interpret their results more easily. Some of these changes include a new categorizing system that defines the "optimum range" for macronutrients needed for plant growth according to the [Recommended Soil Testing Procedures for the Northeastern United States](#) and specifically, a reduced "optimum" range for phosphorus. The [New England Vegetable Management Guide \[and New England Small Fruit Management Guide\]](#) reflects these changes

in interpretation of soil tests and more information may be found on that website.

Taking soil samples. Although soil samples can be taken any time, many prefer to take samples in the fall because this allows time to apply any needed lime, plan a fertility program and order materials well in advance of spring planting. Fall soil tests can be beneficial in determining what has occurred within the growing season and help you plan more effectively for the next year. Finally, turnaround time for a sample submitted in the Fall is only 3-4 days, but can take over a week during the Spring rush. Avoid sampling when the soil is very wet or soon after a lime or fertilizer application. If a field is uniform, a single composite sample is sufficient. A composite sample consists of 10 to 20 sub-samples taken from around the field and mixed together. To obtain sub-samples, use a spade to take thin slices of soil representing the top 6" to 8" of soil. Make sure to remove any thatch or other organic debris such as manure from the surface before taking your sample as this will inaccurately determine your soil organic matter content. A soil probe is faster and more convenient to use than a spade. Put the slices or cores into a clean container and thoroughly mix. Take about one cup of the mixture, dry it at room temperature spread out on paper, put it in a zip lock bag or box obtained from the soil lab and tightly close it. Label each sample on the outside of the bag or box. For each sample, indicate the crop to be grown, recent field history and any concerns.

In many cases, fields are not uniform. There are many reasons for this including: uneven topography, wet and dry areas, different soil types and areas with varying previous crop and fertilizing practices. In such cases, the field should be subdivided and composite samples tested for each section. Soils should be tested for organic matter content every two or three years. Be sure to request this as it is not part of the standard test. A standard soil test costs \$15; with organic matter it costs \$20.

Submitting soil samples. Depending on your goals, different tests are appropriate. In addition to standard soil tests, other services are available including: [Pre-Sidedress Soil Nitrate Test \(PSNT\)](#), [manure analysis](#) (from the University of Maine,)



Solomon working at the ICP

[compost analysis](#), [greenhouse media](#), [soil texture](#), and [Veg plant tissue test](#), [Small Fruit Tissue Test](#), [Tree Fruit Tissue Test](#). (Click on each link to access the submission form).

A fall nitrate test or “report card nitrate test” indicates how closely crop nitrogen (N) uptake has been matched with nitrogen supply for the season. High (> 20 ppm) or excessive soil nitrate content in the fall indicates that too much N fertilizer was applied in the prior season, and a fall cover crop would be beneficial to conserve this remaining N for the following season.

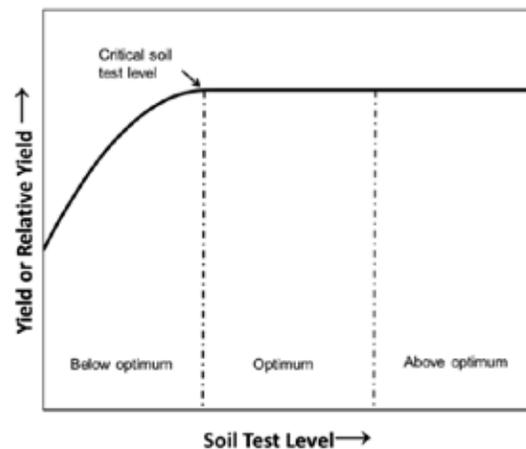


Figure 1. Conceptual relationship between soil test level and crop yield or relative yield. The critical level is defined as the soil test level for a given nutrient above which there is a low probability to an increase in yield due to addition of that fertilizer.

A standard soil test that includes other macro- and micronutrients can help you make the best choice to fit a particular crop to a given soil nutrient profile for the following season. When submitting your soil sample for testing, include the crop code on the form for the crop

to be grown in that field the following year. Haven't done your crop rotation plans yet?

You may ask for recommendations of up to 3 different crops without extra charge. Use [this form](#) for Vegetable and Fruit Crop Soil Submissions.

Interpreting Results and choosing amendments. For specific information on interpreting your UMass Soil Test results, see [this factsheet](#) that accompanies each soil test report.

Soil pH: The lab report will recommend the amount of lime to apply based on the buffer pH, exchangeable acidity and the crop(s) to be grown. Lime can be applied any time, but fall is preferred to allow several months to raise the pH. Split applications (half in the Fall and half in the Spring) may also be used effectively.

Sheet Composting is the process of applying undercomposted ingredients directly to the soil and incorporating. High carbon to nitrogen ratios in this process can hinder the rate of decomposition and bits of undercomposted materials can interfere with seeding. If this method is used for adding soil nutrients and organic matter, it is best done in the late summer or fall. However, a soil test should be conducted in the Spring to better determine nutrient availability for crops. Matured compost applications are usually made in the Spring, although testing may happen in the fall in order to estimate plant available nutrients for next year's crop.

Manure is an excellent source of nutrients, however, as manure ages and decays, considerable nutrient loss occurs from leaching, surface runoff, or volatilization of ammonia into the atmosphere. Manure may also contain pathogens such as E. coli and salmonella. If manure is used, vegetables should not be harvested within 120 days of application. This is a requirement for organic production and a good practice for everyone. In most cases, manure should be applied in the fall or to a non-food rotation crop. Fall-applied manure should be incorporated immediately and a winter cover crop should be planted to protect N from leaching. Manure applications should be made in cold weather to reduce volatilization, but not to frozen ground as this increases surface runoff potential. In order to make accurate nutrient applications to best fit your crop needs, a manure analysis should be conducted if the manure is procured from an on-farm source.

Cover crops planted in the fall, preferably before September 15th, are an excellent way to capture and store nutrients for your crops in the following spring. While your soil test results will not recommend cover

crop selection, here are some general guidelines for fall planted covercrops and their spring contributions of plant available nitrogen (PAN):

Legume cover crops provide up to 100 lb PAN/a. To maximize PAN contribution from legumes, kill the cover crop at bud stage in the spring.

Cereal cover crops immobilize up to 50 lb PAN/a. To minimize PAN immobilization from cereals, kill the cover crop during the early stem elongation (jointing) growth stage.

Legume/cereal cover crop mixtures provide a wide range of PAN contributions, depending on legume content. When cover crop dry matter is 75 percent from cereals + 25 percent from legumes, PAN is usually near zero.

Micronutrient application recommendations cannot be determined accurately by soil labs in New England because deficiencies in crops have not been widely measured in our soils. However, the soil test results do report the ranges found in all the soils that come through the lab so that you may compare where your soil falls in regards to other soils in New England. For recommendations on specific micronutrients needed for crop growth, such as Boron, see the New England Vegetable Management Guide section on micronutrients. Preferred timing of micronutrient applications in the Fall vs. Spring has not been determined. Other Nutrient applications should be avoided until spring when a growing crop is best able to use the applied nutrients in water soluble form and avoid leaching, runoff, or volatilization.

Need further assistance interpreting your soil test results? Contact the soil lab or any of the following Extension Educators:

Soil and Plant Tissue Testing Laboratory: West Experiment Station, 682 North Pleasant St. UMass, Amherst, MA 01003 Phone: (413) 545-2311 e-mail: soiltest@umass.edu website: <http://soiltest.umass.edu>

Greenhouse Nutrient Recommendations: Doug Cox, French Hall 211 UMass, Amherst, MA 01003 Phone: (413) 545-5214 Email: dcoc@umass.edu

Cover Crops and Nutrient Management: Masoud Hashemi, Bowditch Hall, UMass Amherst 201 Natural Resources Rd. Amherst, MA 01003 Tel: (413) 545-1843 Email: masoud@psis.umass.edu

Vegetable Crop Nutrient Recommendations: Frank Mangan, French Hall, UMass Amherst 230 Stockbridge Rd. Amherst, MA 01003 Tel: (413) 545-1178 Email: fmangan@umext.umass.edu

Katie Campbell-nelson, 205 Agricultural Eng. Bldg., UMass Amherst 250 Natural Resources Rd. Amherst, MA 01003 Tel: (413) 545-1051 Email: kcampbel@umass.edu (**Source:** *UMass Vegetable Notes, Vol. 21, No. 21. Sept. 2013*)

New Pesticide Labels Will Better Protect Bees and Other Pollinators

Aug 15, 2013 Washington – In an ongoing effort to protect bees and other pollinators, the U.S. Environmental Protection Agency (EPA) has developed new pesticide labels that prohibit use of some neonicotinoid pesticide products where bees are present.

“Multiple factors play a role in bee colony declines, including pesticides. The Environmental Protection Agency is taking action to protect bees from pesticide exposure and these label changes will further our efforts,” said Jim Jones, assistant administrator for the Office of Chemical Safety and Pollution Prevention.

The new labels will have a bee advisory box and icon with information on routes of exposure and spray drift precautions. Today’s announcement affects products containing the neonicotinoids imidacloprid, dinotefuran, clothianidin and thiamethoxam. The EPA will work with pesticide manufacturers to change labels so that they will meet the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) safety standard.

In May, the U.S. Department of Agriculture (USDA) and EPA released a comprehensive scientific report on honey bee health, showing scientific consensus that there are a complex set of stressors associated with honey bee declines, including loss of habitat, parasites and disease, genetics, poor nutrition and pesticide exposure.

The agency continues to work with beekeepers, growers, pesticide applicators, pesticide and seed companies, and federal and state agencies to reduce pesticide drift dust and advance best management practices. The EPA recently released new enforcement guidance to federal, state and tribal enforcement officials to enhance investigations of bee kill incidents.

More on the EPA’s label changes and pollinator protection efforts:

<http://www.epa.gov/opp00001/ecosystem/pollinator/index.html>

(*Source: New York Berry News, Vol. 12, No. 9 Sept 13, 2013*)

UPCOMING MEETINGS:

Sept. 13, 2013 – *Four Season High Tunnel Production with Jack Manix*. 3PM – 6PM. Walker Farm, East Dummerston, VT. NOFA-VT Summer Meeting. \$10 NOFA members, \$20 non-members. For more information see: <http://nofavt.org/events/four-season-high-tunnel-production-jack-manix>.

Sept. 17, 2013 – *Cover Crops to Cope with the Effects of Flooding on Soil Fertility*. 4PM – 7PM. Intervale Farm Center, Burlington VT. NOFA-VT Summer Meeting. \$10 NOFA members, \$20 non-members. For more information see: <http://nofavt.org/events/cover-crops-cope-effects-flooding-soil-fertility>.

Sept. 18, 2013 – *UMass Vegetable & Fruit eIPM project Twilight Meeting*. 4:00 – 7:00. Tangerini Farm, 139 Spring St. Millis, MA. For more information contact Katie Cambell-Nelson at kcampbel@umass.edu.

Oct. 2, 2013 – *Native Pollinators in Agriculture Project*, 8:00 – 4:00, Ocean Spray Cranberries headquarters in Lakeville-Middleboro, MA. To register for the field day, send an email to Lindsay Grossman at lgrossman@agpollinators.org.

Oct. 3, 2013 – *Soil Resilience and Nutrition: Practical Management Strategies for Soil Fertility*. 3PM – 5:30PM. Shelburne Farm Market Garden, 1611 Harbor Rd., Shelburne VT. \$10 NOFA and Shelburne Farm members, \$20 non-members. For more information see: <http://nofavt.org/events/soil-resilience-and-nutrition-practical-management-strategies-soil-fertility>

Oct. 16, 2013 – *UMass Extension Greenhouse Crops and Floriculture Program – Fall Flower Grower’s Program*. Pioneer Gardens Inc. 198 Mill Village Road, Deerfield, MA. For more information contact Bob Luczai, MFGA: 781-275-4811 or Tina Smith, UMass Extension: 413-545-5306 or go to: <http://extension.umass.edu/floriculture/events/fall-flower-growers-program>.

December 3-5, 2013 - *Introduction to Hazard Analysis of Critical Control Points (HACCP)*. UMass Amherst Campus Center, Amherst, MA. This course covers the fundamentals of HACCP (Hazard Analysis Critical Control Point) taught by certified International HACCP Alliance instructors. This particular course will have an emphasis on fresh-cut produce, beverages (including juice and cider), baked goods, and dairy products. The concepts will be reinforced by breakout group activities in which participants will have the opportunity to prepare a HACCP plan. All participants will receive an International HACCP Alliance certificate issued through the University of Massachusetts upon successful completion of the course. For cost and registration information, go to: <http://ag.umass.edu/events/introduction-hazard-analysis-critical-control-points-haccp>.

December 17-19, 2013 – *New England Vegetable & Fruit Conference*. Radisson Hotel, 700 Elm St., Manchester NH. For the full program and registration information, go to: <http://www.newenglandvfc.org>.

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