

# Berry Notes

Prepared by the University of Massachusetts Fruit Team

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### UPCOMING MEETINGS

## CROP CONDITIONS:

**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 Wing 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 Brown Marmorated Stinkbug Website Launched by NE-IPM -

‘The brown marmorated stink bug is advancing, yet its secrets are unraveling. Our team of more than 50 researchers launched a website bringing its latest findings to growers in North America. Our group is solving the mysteries of this pest that damages a huge range of fruit, vegetable, and ornamental crops. You’ll find a photo identification guide and recommendations for how to control it. Connect to our researchers’ sites, send a specimen for identification, and report a sighting. Go to: <http://www.StopBMSB.org/>

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## ENVIRONMENTAL DATA

The following growing-degree-day (GDD) and precipitation data was collected for the two-week period, September 6 through September 19. Soil temperature and phenological indicators were observed on or about September 19. Total accumulated GDDs represent the heating units above a 50° F baseline temperature collected via our instruments for the 2012 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 2012		
Cape Cod	210	2,769	70°	2.20"
Southeast	191	2,638	72°	1.00"
East	255	2,939	69°	2.30"
Metro West	162	2,532	70°	0.63"
Central	--	--	--	--
Pioneer Valley	190	2,794	66°	1.61"
Berkshires	158	2,276	62°	3.75"
Average	194	2,658	68°	1.92"

(Source: UMass Landscape Message #21, Sept. 21, 2012)

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## 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.**

### Fall herbicide applications for strawberries

*Bruce Bordelon, Purdue University*

A number of herbicides can be used on strawberries during late summer and fall to prevent weed germination, kill emerged weeds, and provide residue control until the following spring. The key set of weeds you need to control during this period are fall germinating winter annuals such as chickweed, henbit, and shepherds purse. You may also need to prevent germination of wheat, oats, or rye seeds that come in the straw mulch you apply for winter protection.

**Devrinol** (napropamide) is a preemergence herbicide that can inhibit rooting of daughter plants so it should be applied after early forming daughter plants have rooted. Late forming (after late August) daughter plants do not contribute to yield and Devrinol can be applied before these plants root. Devrinol must be applied before winter annuals and small grains emerge. Devrinol provides excellent control of small grains and some winter annuals such as chickweed. Devrinol must be moved into the soil by cultivation or water after application.

**Dacthal** (DCPA) is a preemergent herbicide that can be used in new plantings or immediately after renovation. It provides good control of many grasses and some broadleaves such as purslane and lambsquarter. Like Devrinol, it must be applied before weeds emerge.

**Sinbar** (terbacil) is primarily a preemergent herbicide but it has some postemergence activity against small susceptible weeds. Fall applications of Sinbar should only be applied after the strawberries are completely dormant. If Sinbar is applied to actively growing strawberries, injury can occur. Cultivars differ in tolerance to Sinbar. In general, less vigorous cultivars have greater injury. Applications are most effective when applied to the soil

and activated by rainfall or irrigation. Sinbar provides excellent control of many winter annual weeds. Fall applications of both Devrinol and Sinbar will persist to the following spring.

**Chateau** (flumioxazin) is primarily a preemergent herbicide but has some postemergent activity against small susceptible weeds. Fall applications of Chateau should only be applied after the strawberries are completely dormant. If Chateau is applied to actively growing strawberries, injury can occur. Add 1% crop oil or 0.25% nonionic surfactant to improve postemergence control of small weeds.



**Prowl H20** (pendimethalin) is a preemergent herbicide that can be applied in fall after strawberries are completely dormant. Rainfall or irrigation following application provides best results.

**Poast** (sethoxydim) is a postemergent, grass specific herbicide. The grasses must be actively growing, thus Poast should be applied in late summer or early fall before plants become dormant. Summer annual grasses, such as foxtails and crabgrass, will be killed by fall frosts, and do not require Poast applications for control. Poast is more effective against annual than perennial grasses. Poast can be used in the fall to suppress perennial grasses such as quackgrass, control early emerging small grains, and kill winter annual grasses such as wild oats and downy brome.

**2,4-D amine**, a systemic, postemergence broadleaf herbicide, can be applied when strawberries are dormant to control some winter annuals. 2,4-D provides good control of many mustards and shepherdspurse, but is not very effective against chickweed. The herbicide should be applied to actively growing weeds. Be careful of 2,4-D drift causing injury to non-target plants. Check the label as only a few formulations are labeled for strawberries.

**Gramoxone Extra** (paraquat) can be applied as a directed spray between strawberry rows, using shields to prevent contact with strawberry plants. Gramoxone is a nonselective herbicide, so it will kill or severely injure strawberries it contacts. Gramoxone is a restricted use pesticide and is extremely toxic to animals including humans. It provides excellent control of annual grass and broadleaf weeds. Gramoxone does not extensively translocate in plants so it does not control perennial weeds. Weeds should be actively growing when Gramoxone is applied.

Ultra Blazer (acifluorfen) is a post emergent herbicide that provides good control of annual grasses and broadleaves. It can be applied when plants are dormant during fall or early spring.

The Midwest Small Fruit and Grape Spray Guide has a section on weed management. It is available on line at <http://www.hort.purdue.edu/fruitveg/> (*Source: Facts for Fancy Fruit, Vol. 12, No. 10, Sept. 2012*)

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## 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.**

### Disease Snapshot: Verticillium Wilt of Raspberries

*Zachary Frederick, Graduate Student and R. Kerik D. Cox, Assistant Professor, Cornell University*

**Causes:** *Verticillium albo-atrum* and *V. dahliae* **When to watch for it:** Year round.

**First line of defense:** Plant only disease free nursery stock.

**Summary:** Verticillium wilt is a devastating disease of many crops, including raspberries where it is also called

blue stem or blue stripe wilt. Verticillium sp. overwinter as microsclerotia and enter plants through wounds in the roots. The pathogen spreads through the vascular tissue of the host, which eventually kills it. Later in the season, the pathogen forms new microsclerotia, which are returned to the soil through rotting plant matter. Some cultural control can be achieved by pruning dead and dying canes

and removing them, thereby preventing this step of the life cycle.



Above, **A**: Raspberry cane infected with *Verticillium* exhibiting the bluing symptom. **B**: *Verticillium* infections can appear very severe in a small patch of canes, but have one or two canes that are still being infected that will appear fairly healthy for most of the season.

*Verticillium* is most devastating to black raspberries, but red and purple raspberries can be affected. Infected black raspberry canes are often severely stunted, but will not die from infection in the first season unless the disease pressure and conditions favorable for disease are high. However, infected canes usually die within three years. Canes may show bluish discoloration just prior to dying. Cutting such canes will show red, discolored within vascular bundles. Symptoms on red raspberry are often less severe, and are most apparent when the leaves fall off in the fall while the petioles remain attached. Often clusters of leaves will remain on infected canes tips into the winter. Red raspberry canes may have some yellowing (chlorotic) leaves, but will usually only exhibit reduced vigor under high disease pressure. Symptoms alone may not provide an accurate diagnosis because other root diseases, insect feeding, and environmental problems may produce identical symptoms. Some growers may rotate out infected raspberry patches with alternative crops. However tomatoes, eggplants, peppers, pigweeds, horse nettles, and stone fruits should never be planted as a rotational crop, since they are common hosts of *Verticillium*. (Source: *New York Berry News*, Vol 11, No. 8. Aug. 2012)

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## 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](http://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.

## Organic Blueberry Production Research Project

*Bernadine Strik and Dan Sullivan, Oregon State Univ., and David Bryla, USDA-ARS*

This article provides an overview of a multi-year research project to investigate organic production options for highbush blueberry in the Pacific Northwest. The project was initiated in response to industry requests and was designed with input from an advisory group that included growers using both conventional and organic production systems, as well as leaders in the nursery and fresh- and processed fruit handling industries. The goal of the project is to evaluate different planting methods, cultivars, fertilization, irrigation, and weed management practices for their efficacy and production costs in establishing an organic blueberry field.



*Figure 1. Organic Blueberry Production research plots at the OSU North Willamette Research & Extension Center. June 4, 2009. Photo credit: Bernadine Strik, Oregon State University.*

### Organic blueberry production overview

Total acreage of cultivated highbush blueberries has continued to increase in both North America and other areas in the world. Blueberry consumption has also risen, but the increase in blueberry production has outpaced demand in the recent years (2008 and 2009), which lowered wholesale prices and thus reduced grower returns. This is a change from over 10 years of favorable markets for processed and fresh fruit, which encouraged growers to increase blueberry acreage. The growth in markets and production is highly related to the emphasis on positive health benefits of blueberries used in marketing campaigns starting in 1997. The volume of blueberries sold fresh, as opposed to frozen, hit a record high of 60% of total production in 2009, as reported by the US Highbush Blueberry Council (NASS, 2010). This reflects the importance of fruit quality and fresh fruit market options.

The market for organic blueberries is very strong. There were an estimated 480 acres of organic blueberries in North America in 2003. Although a detailed survey on

organic blueberry acreage has not been done since 2003, the total organic berry crop acreage in the USA was 8,140 acres in 2008 (ERS, 2010). Over 60% of the organic berry crop acreage was located in California and was mainly strawberries, while about 20% was located in Oregon and Washington and was mainly blueberry. Historical data on organic blueberry prices compared to conventional are not available. In other berry crops, wholesale prices for organic fruit were 5% to 25% higher in raspberries and 48% to 135% higher in strawberries in 2008 (ERS, 2010). With record prices for fresh and processed blueberries in 2006 and 2007, wholesale organic prices were 20% to 50% higher than conventional. In 2008 and 2009, the difference between organic and conventional price was about 20% to 55%, depending on the fruiting season.

### Project description

The long-term goal of this project is to develop organic production systems for highbush blueberry that:

- maximize plant growth, yield, and fruit quality
- facilitate weed, water, and nutrient management
- provide economic benefit to growers

The study was established at the Oregon State University North Willamette Research & Extension Center in 2006 in a transitional field that was certified organic in May, 2008. Following standard industry practices, typical "two-year-old" plants were obtained from a commercial nursery and planted 2.5 feet apart within rows and 10 feet apart between rows in the month of October. Soil at this site is a Willamette silt loam favorable for blueberry production with 3.7% organic matter content and a pH of 4.9. No organic material was incorporated into the soil prior to planting. A grass cover crop is grown in the row middles. Plants are irrigated using a single lateral of drip tubing with 0.5 gallon-per-hour in-line emitters spaced every 12 inches.

The experimental design is a split-split plot with 5 replicates. Treatments consist of two cultivars ('Duke' and 'Liberty'), two production methods (raised bed or flat ground), three weed management practices [sawdust mulch + hand (or mechanical) weed management; compost (yard debris) + sawdust mulch + organically-approved herbicides as needed; and landscape fabric (weed mat) with sawdust mulch in the plant hole], and two types and rates of organic fertilizer (feather meal and liquid fish fertilizer at 25 or 50 lb N/a). The raised- and

flat beds are randomly assigned to single rows as main plots, and within them, fertilizer treatments are randomly assigned as subplots, and cultivar and weed management practices are randomly assigned as sub-subplots. Each sub-subplot is 15 feet long and consists of six plants spaced 30 inches apart.

**Topics under investigation in this research project include:**

- Production Systems
- Blueberry Cultivars 'Duke' and 'Liberty'
- Raised Bed vs. Flat Ground Plantings
- Compost for Blueberries

- Nitrogen Fertilizer for Organic Production
- Irrigation Management in Blueberry
- Organic Weed Management in Blueberry
- Blueberry Roots
- Organic Blueberry Production Costs

To see a full report on this project, go to: <http://www.extension.org/pages/31680/organic-blueberry-production-research-project>.

(Source: eExtension Organic Blueberry Production Research Project).

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## 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.*

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 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



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



Powdery mildew colonies. Photo credit: Annemiek Schilder, MSU

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 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 eradicated properties and can reduce the number of visible colonies (see graphs). To reduce the number of cleistothecia, Sulfurix, Elite and Kaligreen appeared most effective (Elite did not eliminate existing infections, but prevented new infections). Do not apply Sulfurix 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.



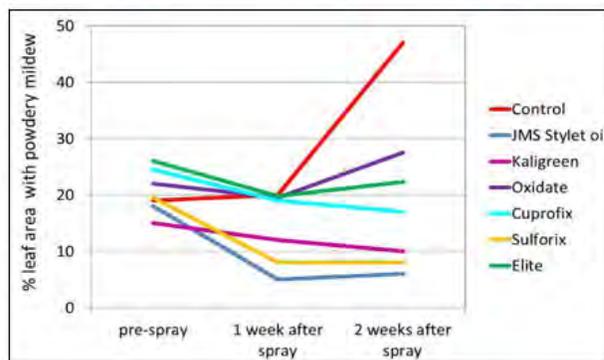
**Powdery mildew cleistothecia on vein of grape leaf.** Photo credit: Laura Miles

A few things to remember when applying eradicated sprays.

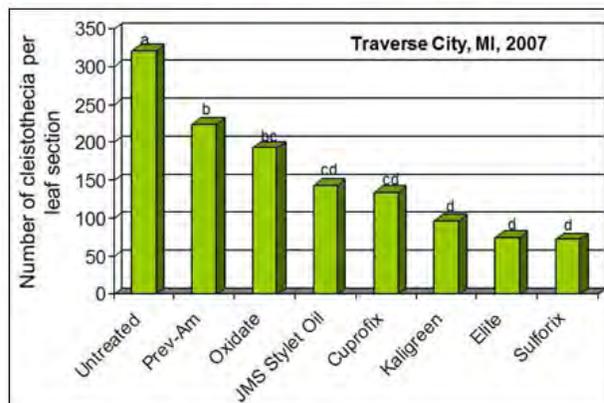
- Apply treatments as soon as possible after symptoms are seen (regular and careful scouting is important).
- For cleistothecia prevention, apply an effective eradicated on visible powdery mildew colonies between now and early September.
- Ensure thorough coverage of leaves and bunches, which means increasing 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)

## What to Watch For - Wasps and bees in grapes

Hannah Burrack, North Carolina State University

Today I had 2 phone calls and emails about wasps and bees feeding on grapes. Given our warm summer, this is not a surprise. In fact, last Friday when [Turner Sutton](#), NCSU Plant Pathologist, and I were visiting vineyards last week we noticed several varieties (Marsanne & Viognier, to name a few) that were nearing harvest. Like many other crops, this is about 2 weeks earlier than normal. I said to Turner as we were leaving, "All this ripe fruit says to me is that I need to be ready for calls about bees, wasps, and green June beetles," and here we are!

Ripe or nearly ripe fruit coupled with the rain we have recently gotten is a recipe for splitting and other mechanical injury. These injured fruit will attract bees, wasps, and beetles, but they will not just feed on the damaged fruit. Once these opportunist insects are in the grapes, they can also feed on relatively sound fruit.

As I told both people I spoke with today, I do **NOT** advocate treating bees and wasps with insecticide. There are several reasons for this, with the foremost being that these are beneficial insects. They are our pollinators and predators that we work so hard to maintain all other times of the year. [Pollinator health](#) is a major issue across agriculture systems, and is it irresponsible to be treating bees and wasps with insecticides in grapes. Even if pesticides were used, they will not solve the problem. Most bees and wasps are social insects with large colonies including foraging workers and reproductives. Only a fraction of the workers from a colony will be present in grapes at any given time, and no pesticide applied during harvest is going to have a long contact residual. This means that a pesticide application will kill the relatively small number of foraging workers in a field when it is applied, but leave the rest of the colony intact to re infest when the pesticide has dissipated.

### What can be done to reduce bee and wasp injury?

#### **Be ready to harvest.**

I am not advocating harvesting fruit before you reach desired [brix](#), but if fruit is ripe

enough to split and attract bees and wasps, it is not far from harvest-ready. Harvest clusters as they become mature. This may mean picking several times and picking the early ripening areas (ie. the sunny side of the row) first.

#### **Practice good sanitation.**

Remove damaged fruit from the field promptly. Fruit left on the ground or on the vine will attract insects. Powdery mildew and thrips damaged fruit are more prone to splitting.

#### **Be choosy about what you harvest.**

Not all the grapes in the field will make it to the crusher. If wasps and bees are damaging a few early ripening clusters, remove them from the field preharvest. Do not harvest damaged fruit.

#### **Consider trapping.**

Several [traps](#) are marketed for wasps.

Providing an attractive lure outside your planting may reduce populations in the vineyard. Suggested lures include soda, sugar syrup, and meat. Yellow trap are typically the most attractive.

#### **Check the field for nests.**

Wasps in particular can make nests on trellis wires or vines. If there are nests present in fields, these can be spot treated with insecticides or removed. Surrounding areas should also be scouted for nests, which can be spot treated.

#### **Protect yourself.**

Wear gloves, and if necessary, a [head net](#) when harvesting.

The early season means we need to be prepared for more wasp and bee presence as ripe fruit develops, but this are not unmanageable issues. Happy harvesting!

#### **More information**

[Harvest pests of grapes](#) - University of Kentucky

(Source: [NC Small Fruit & Specialty Crop IPM Blog Entry](#), Aug. 5, 2012)



*Wasps and bumble bees feeding on grapes. Photos: Ric Bessin, University of Kentucky Entomology*



*Ripening fruit at Junius Lindsay Vineyard. Photo: HJB*

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## GENERAL INFORMATION

### Spotted Wing *Drosophila* Guidelines For Management And Control In Berry Production

*Carlos García-Salazar, Michigan State University Extension*

#### Three steps to better management and control of spotted wing *Drosophila* in berries.

The 2012 fruit growing season is nearing conclusion almost a month ahead of previous years due to unusual climatic conditions that prevailed for most of the growing season. In addition to the problems created by spring frosts and summer drought, the presence of [spotted wing \*Drosophila\*](#) (SWD) in high numbers created serious problems for berry growers not used to dealing with such a devastating pest. Growers are still evaluating their losses. In several cases, blueberries delivered for fresh packaging or processing were rejected or downgraded and diverted for juice. In raspberries and blackberries, SWD larval infestation caused bigger problems than in blueberries, especially in fall varieties. In some instances, more than 50 percent of the entire crop was lost.

Despite these failures, Michigan's small fruit growers are learning to deal with the threat of fruit infestations caused by the presence of SWD larvae at harvest time. So far, growers that succeeded in preventing the presence of larvae in harvested fruit followed three simple steps.

- Installation and monitoring of SWD traps.
- Timely application of control measures.
- Fruit inspection after each insecticide application.

So far, the most effective trapping device for SWD is the plastic trap with the yellow sticky card inside and loaded with attracting bait made of sugar and yeast. The trap baited with this solution provided a much earlier detection of fruit fly infestations than traps baited with apple vinegar. Since no economic threshold has been established for the initiation of SWD control, insecticide applications are recommended immediately after the first flies are found in the traps. For more

information on the preparation of the sugar and yeast, please read [Managing spotted wing \*Drosophila\* update](#).

Early detection is critical to prevent the establishment of SWD in the target crop. Therefore, growers and pest consultants must check SWD traps at least twice a week to determine the appropriate timing for insecticide application. The characteristics of the SWD population dynamics, multiple generations in a short period of time, make it very difficult to determine the appropriate time for insecticide applications if traps are checked only once a week.

Verifying the effectiveness of pest control actions was critical for successful SWD management and control. Growers that inspected their berries after each insecticide application were able to manage SWD infestations while preventing unnecessary applications of insecticide (application on a calendar basis). Fruit monitoring also allowed growers to repeat the applications if failure in preventing larval infestations was observed. Submerging the berries in a salt solution is a simple and easy method to detect the presence of larvae in fresh berries after the insecticide application. For more information, please read [Sampling harvested berries to detect spotted wing \*Drosophila\* larvae infestations](#).

We are still learning to deal with the SWD pest problem. However, the experience gained during the 2012 fruit growing season together with results from ongoing research conducted by the [Michigan State University Extension](#) Small Fruit Team will improve our understanding and ability to manage this pest. Through the knowledge acquired during this season, we will be better prepared to provide growers with more effective alternatives and strategies for the control and management of SWD during the 2013 fruit growing season. (*Source: Michigan Fruit Advisory Team Alert, Sept. 19, 2012*)

### 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://nesare.org/get/farmers/>

Follow-up questions can be emailed to [Carol.Delaney@uvm.edu](mailto:Carol.Delaney@uvm.edu) or call 802-656-0697. Massachusetts coordinator for SARE is Sonia Schloemann, Department of Plant, Soil & Insect Sciences, West Experiment Station, University of Massachusetts, Amherst, MA 01003, Phone: 413-545-4347, FAX: 413-577-3820, Email: [sgs@umext.umass.edu](mailto:sgs@umext.umass.edu)

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

**Note: Proposal deadlines are in December with awards announced in March**

### **Azinphos-Methyl Phase-Out Update**

*Amy Irish-Brown, Michigan State University*

Distribution of Azinphos-methyl (AZM), also known as Guthion, is prohibited after September 30, 2012, but product use is extended until 2013.

Many have heard that azinphos-methyl (AZM), commonly known as Guthion, is due to be phased out September 30, 2012, and earlier this season you were encouraged to use up any remaining supplies by that date. Work has been afoot by apple industry leaders to maintain AZM uses as it is now.

On behalf of the Michigan Apple Industry, [MACMA](#) and the [Michigan Apple Committee](#), with the help of [Michigan State University](#) researcher [Larry Gut](#), submitted a rebuttal letter to EPA addressing concerns regarding the September 30, 2012, phase-out of AZM. Michigan's Apple Industry is of the belief the total phase-out of AZM would not only disrupt current integrated pest management (IPM) practices and increase financial loss to producers, but also impact markets.

EPA held a conference call with stakeholders on August 30, 2012, and announced the following:

"...As a result of this year's abnormal weather events, growers have been left with unused stocks that cannot be used unless EPA modifies the existing cancellation order to permit additional use of the existing stocks in growers' possession. EPA believes it is appropriate to allow growers to use the remaining stocks in their possession – for another use season – through September 30, 2013 – and therefore is today modifying the existing cancellation order to permit growers to use stocks in their possession for another year.

For the reasons explained above, EPA hereby modifies the cancellation order of February 20, 2008, to permit use of AZM products until September 30, 2013. The distribution and sale provisions remain unchanged and therefore any distribution or sale of AZM products is prohibited after September 30, 2012 ..."

Growers are urged to assess their existing inventories immediately and contact their spray consultant if they have excess. No transfers can take place after September 30, 2012.

You can read the above decision in its entirety at [Azinphos-methyl: Notice of Receipt of Request for Label](#)

[Amendments](#), as well as read the [EPA news release](#).

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

### Sample Soils for Nematodes Now

Pam Fisher, OMAFRA

Nematodes have caused lots of problems in strawberry fields in the past few years. Nematodes cause variable vigor and early decline of a field. Be sure to sample fields for nematode populations **before** planting strawberries or raspberries. September is a good time to sample because soils are still warm, and generally moist.

For information on how to sample, see: Sampling Soil and Roots for Plant Parasitic Nematodes, <http://www.omafra.gov.on.ca/english/crops/facts/06-099.htm> Remember that nematode samples are perishable. Nematodes may be very hard to kill in your field, but they are very easy to kill in a sample. Sample correctly to get the best results.

- Sample approximately 8" deep, and discard the top 1-2" of the soil core.

- For row crops, sample in the row, so that samples contain feeder roots.
- Take 10-20 soil cores per acre. Ideally, each sample should represent no more than about 6 acres.
- Mix the soil cores thoroughly, but gently.
- Place soil samples in a cooler with ice. Keep cool (not frozen) until delivery. Samples should not be subjected to sudden temperature changes.
- Deliver samples to the lab as soon as possible.

[In New England, soil samples for nematode analysis may be sent to [UMass Diagnostic Lab](#). Cost \$75]

(Adapted from: Ontario Berry Grower, Vol 5, Sept. 2012)

### Measuring Insecticides For Backpack Sprayers And Small Plantings

Ruth Hazzard, UMass Extension

Growers with diverse crops and small plantings often need to be able to apply pesticide to beds or plots of several hundred square feet rather than acres, and the pesticide labels often only give rates on a per acre basis.

It is important to use the correct amount of insecticide in your backpack sprayer when spraying a small area. Calibration and mixing require some basic math, as do a lot of aspects of farming! The methods for backpack sprayers and tractor sprayers are essentially the same. Figure out the area to be sprayed and how much pesticide is needed for that area. Measure the amount of water you need to cover a known area, using the same equipment and walking or driving speed that you will use when spraying. Then do the math so that the insecticide and the water rates both match your target area.

#### Why does it matter? Why do you need to be careful about these rates?

1. Effective control of the pest depends on correct rates. 2. You are legally responsible for following the label instructions. This is especially important when you are selling the crop to the public.

3. The safety of the applicator, workers and the public depends upon correct rates and using pesticides according to instructions on the label.

#### Read the label. Find and follow the following instructions:

-- Personal protective equipment (PPE) - what you must wear when mixing and spraying. -- Agricultural Use Requirements - what workers must wear during the re-entry interval.

-- Crops and pests listed - The pesticide **MUST** be labeled for the target crop. -- Restricted Entry Interval (REI) - during this time, no one should work in the sprayed area unless they are wearing protective equipment.

-- Days to Harvest (DH) - how long you must wait after a spray before harvesting (note: days to harvest may be less than REI; it is not a misprint) -- Rate per acre or concentration per gallon (for back pack sprayer)

-- Mixing instructions.

The label often uses inconvenient measures. Conversions are key to your calculations. Here are some conversion ratios:



-- 16 dry oz (by wt) = 1 lb -- One ounce (dry weight) equals 28.45 grams. -- 32 fl oz = 1 qt. -- 128 fl oz = 1 gal -- Liquid measure in (fluid) ounces is already a volume so it is easier to measure. One fluid ounce equals 6 teaspoons (tsp) or 29.6 milliliters (ml). An inexpensive measuring device for ml can be found in the children's medicine section of drug stores. -- 43560 sq ft = 1 acre.

All pesticide labels will give rates to be used per acre. Some labels also provide a rate of product to use per gallon, specifically for backpack sprayers. If this is given, add that amount of material to each gallon of water. Spray enough to cover the crop foliage, but not to runoff on the ground. The following rates for two commonly used organic insecticides are listed on the product labels:

Product	Amount per gallon	Amount per 3 gallons	Rate per acre
Entrust	0.43 (1/4 tsp)	1.3 g (3/4 tsp)	2 oz
Surround WP	3 cups	6 cups	50 lbs

If a gram scale is not available, that it is possible to measure Entrust by volume. Based on repeated samples, we have found that there is 1.7 gm per teaspoon (shaved level and tamped slightly). So for Entrust the recommended rate is 1.3 grams (3/4 teaspoon) in 3 gallons of water for 1,000 sq. ft. ☼ (*Source: UMass Veg Notes on June 17, 2010*).

### How To Get Help From NRCS Conservation Programs

*Ruth Hazzard, UMass Extension*

If you're a farmer, you can get help from the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) to protect natural resources on the land that you own or manage. NRCS provides free conservation planning assistance and administers several programs, authorized under the federal Farm Bill, that provide financial assistance to help implement conservation measures identified in your conservation plan.

A conservation plan provides a roadmap to sustaining or improving production while managing the natural resource base that supports your operation. Conservation planning identifies objectives, resource limitations and opportunities, and evaluates alternatives to help you make decisions in managing your operation. Since 1935 when the agency was established during the Dust Bowl, NRCS has focused on soil erosion reduction. Over time, the NRCS has expanded its conservation focus to protect water quality, soil quality, water conservation, air quality, rare wildlife, and the sustainable production of crops and livestock.

Developing a conservation plan is the first step in working with NRCS and applying for most USDA conservation programs. This begins with a friendly phone call to your local NRCS office to set up an appointment with a conservation planner. This may require you to visit the NRCS office and an NRCS representative may visit with you to walk your land and discuss your concerns. You may also need to register your farm with the USDA Farm Service Agency for your area as part of initiating the conservation plan.

At times, there is a backlog of farms waiting for conservation planning assistance, so it is best to start the process well before the deadlines for conservation programs. If a conservation program can help you

address the resource needs identified in your conservation plan, a NRCS representative will be happy to explain the application process.

#### The Conservation Planning/ Program Application Process:

1. Establish a customer record with the USDA Farm Service Agency (FSA). This may require an appointment with the local FSA office, typically located in your local USDA Service Center. Often it helps to bring a copy of your latest tax return to aid with registration. You want to register the farm with FSA under the same name and tax ID that you file your taxes with.
2. Work with FSA and NRCS to develop a map of your farm and other fields you manage. This will help the planner locate fields to visit during the site visit, as well as make sure the manager of fields is up to date in the FSA records.
3. NRCS determines if your land is eligible for conservation planning and/or programs. FSA determines additional eligibility (such as income limits) for conservation program participation.
4. A NRCS planner will conduct an initial site visit. During that site visit you and the planner will work to identify all the fields/areas that you would like to include in your conservation plan and determine what conservation practices may be eligible. It is good to include leased fields that you plan to continue farming in your conservation plan.
5. After the site visit, your NRCS planner will work to develop some initial recommendations and a conservation plan.

6. Review your conservation plan and, if desired, work with an NRCS planner to identify which practices are to be included in a conservation program application.
7. Work with your NRCS representative to determine the program and funding pool for which you wish to apply and fill out a Conservation Program Application.
8. Complete eligibility forms each year to keep your USDA conservation program eligibility up to date.

Your application can not be considered unless you keep these forms up to date. For more information, contact your local NRCS office (<http://offices.sc.egov.usda.gov/locator/>) or visit the NRCS Massachusetts website at [www.ma.nrcs.usda.gov](http://www.ma.nrcs.usda.gov).

(*Source: UMass Vegetable Notes, Vol. 23, No. 19. Sept 13, 2012*)

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#### UPCOMING MEETINGS:

**October 1, 2012** – *Buildings and Facilities for Small Farms*, 6:30 – 8:30pm. Boscawen Municipal Complex, 116 North Main Street, 4th Floor, Boscawen, NH, 03303. For more info or to register for this talk, please email the Boscawen Agriculture Commission at [agriculture03303@gmail.com](mailto:agriculture03303@gmail.com) or call 603-753-9188.

**October 2, 2012** – *Winter Tunnel Production and Season Extension*, 3-5pm. Bread and Butter Farm, Shelburne Vt. \$10 NOFA-VT members; \$20 non-members. **For more information:** [NOFA-VT Summer Workshop Series](#). **Contact Email:** [info@nofavt.org](mailto:info@nofavt.org) or **Phone:** (802) 434-4122.

**October 24, 2012** - *Attracting and Conserving Natural Enemies in Plant Production Yards and Greenhouses*. 9:30am - 3:30pm, Publick House, Sturbridge, MA. Details: <http://extension.umass.edu/floriculture/>.

**November 5, 2012** – *Profitable Year-Round Farming and Marketing*, 8:30am – 5:30 pm. Stonehill College, The Martin Institute, 320 Washington Street, Easton, MA. Presented by NOFA-MA. For more information and registration, go to: <http://www.nofamass.org/seminars/fallseminar.php>.

**November 7-8, 2012** – *Northeast Greenhouse Conference and Expo*. DCU Center, Worcester, MA. For complete program and registration information, go to: <http://www.nogreenhouse.org/>.

**January 12, 2013** – NOFA-MA Winter Conference. Worcester State University. For complete program and registration information, go to: <http://www.nofamass.org/conferences/winter/index.php>.

*If you know of an event that would be suitable for this list, please forward to [sgs@umext.umass.edu](mailto:sgs@umext.umass.edu)*

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*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.*