

# Berry Notes

Prepared by the University of Massachusetts Fruit Team

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[www.umass.edu/fruitadvisor/berrynotes/index.html](http://www.umass.edu/fruitadvisor/berrynotes/index.html)



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### UPCOMING MEETINGS

## Current Conditions:

**Strawberry** fields remain quiet at this time of year. Dayneutral varieties are still fruiting. Tarnished plant bug and two-spotted mite may still be active in these fields. 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. **Highbush Blueberry** harvest is done. A few very late varieties may still be producing. Now is a good time to 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. Also, be sure to keep your blueberries watered during the coming weeks to avoid drought stress as they go into dormancy. **Summer raspberry** harvest is done. Be on the lookout for Orange Rust on black raspberries and blackberries and Late Leaf Rust on raspberries. **Fall raspberry** harvest is still underway. Botrytis fruit rot may flare up following recent rains. Drip irrigation may still be needed to help plants support remaining fruit. Also check for mites and leafhopper damage. **Grapes** are well into harvest. Table grape harvest is complete with growers reporting a good year; low disease pressure, few birds. Wine grape harvest is progressing with early varieties already done. Ripening conditions have been outstanding this year. Scouting for disease and insect are still important activities now. Maintaining a healthy canopy, even after harvest, is important for ensuring that vines enter into dormancy in good condition.

**Brown Marmorated Stink Bug** - The Brown Marmorated Stink Bug is an introduced pest in New England and feeds on a wide variety of plants. Reported hosts include fruits such as apple, peach, pear, mulberries, grapes, ornamentals such as butterfly bush, *Paulownia* sp. and some weeds such as burdock. Feeding can cause significant injury to commercial crops. For more information on this and other introduced/invasive pests, see the website for the Massachusetts Introduced Pests Outreach Project at <http://www.massnrc.org/pests/index.htm>.

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## ENVIRONMENTAL DATA

The following growing-degree-day (GDD) and precipitation data was collected for a two-week period, September 2 through September 15, 2010. Soil temperature and phenological indicators were observed on or about September 15, 2010. Accumulated GDDs represent the heating units above a 50° F baseline temperature collected via our instruments from the beginning of the current 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	2010 GROWING DEGREE DAYS		2009 GDD near this date	Soil Temp (°F at 4" depth)	Precipitation (1-Week Gain)
	2-Week Gain	Total accumulation			
Cape Cod	233	2,728	2,325	82°F	0.75"
Southeast	226	2,695	2,217	76°F	0.40"
East	290	2,997	2,472	79°F	2.02"
Metro West	246	2,767	2,313	75°F	0.24"
Central	--	--	2,159	--	--
Pioneer Valley	233	2,683	2,232	74°F	0.35"
Berkshires	218	2,503	2,436	75°F	1.49"
AVERAGE	241	2,729	2,319	77°F	0.88"

(Source: UMass Extension 2010 Landscape Message #23, Sept. 17, 2010)

-- = information not available

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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 herbicide you should consider using is Poast® for controlling grasses. Poast® 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 with Poast® 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. Weed management later in the fall can include applications of preemergent materials such as Devrinol® and Sinbar®.

√ **Diseases:** Clean up severe infections of leaf spot and powdery mildew. Rally® and Pristine® may be a good materials for this use. 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® or Phostrol® in September or early October in areas where Red Stele has been identified. 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 diseases and should not be allowed to build up

especially when they are in the winged form and can disperse to other fields.

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## RASPBERRY

### 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.

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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 Winter Moth. 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.

### Diagnosing Blueberry Problems

*Kathy Demchak, Penn State University*

Blueberries are a popular crop in the state, and more people are growing them all the time. Last November's Fruit Times Feature Article (<http://fruittimes.cas.psu.edu/>) outlined steps to get a planting off to a good start. This one covers what might be wrong when plantings aren't doing so well. There are always exceptions, but here are some general guidelines to use when trying to figure out blueberry (and even other crop) problems.

First, it's easy to assume that when the plants aren't growing well, they must have a disease, but that's not always the case. Disease organisms may be affecting the plants, but often other problems contribute to poor growth. Just meeting basic plant needs goes a long way towards having a healthy planting. This means 1) getting the soil pH into the right range (4.5 – 5.0 for blueberries) hopefully before planting, 2) making sure the plants have plenty of water (which doesn't mean planting them in a spot with poor drainage), and 3) growing them in a soil with plenty of organic matter. It also helps if you have a soil to which blueberries are naturally adapted. If acid-loving plants (wild blueberries, rhododendrons, mountain laurel, and teaberries) abound in nature where you live, your soil is one to which blueberries are suited. Unfortunately, this isn't the case with many of our agricultural soils, which are often high in calcium. Blueberries are in a group of plants known as calcifuges, which means "calcium-fleeing". If you have a high calcium soil (soil test shows more than 2000 lb of calcium per acre) either naturally or from liming it for decades, and you do everything else right but your blueberries still don't do well, the site may just not be a good site for blueberries. Besides providing these basics, other practices that help are keeping the planting well-pruned, fertilizing with the right rate and type of fertilizer

(ammonium nitrogen, not nitrate nitrogen), and managing weeds.

If you've met the plants' basic needs and problems still develop, there are few steps to take in figuring out what is wrong. Look for clues and patterns, and think about the following questions.

- 1) Does the problem affect the whole field evenly or is it worse in certain areas? Root rots such as Phytophthora root rot usually occur to the greatest extent in low spots.
- 2) When did you first notice the problem, was it relative to any spray applications or unusual weather conditions? In the past few years, I've gotten quite a few calls on all berry crops that were related to phytotoxicity, either due to tank mixtures, warm temperatures during application, or too many applications of the same product. Look for patterns – for example, if you drive every other row and use an airblast sprayer, see if symptoms look worse on the side of the row closest to the nozzles, and check the foliage that would have received the lightest amount to see if it looks better. Disease symptoms are often worse where the foliage is the densest, but phytotoxicity symptoms often disappear there. To the untrained eye (that's any eye that doesn't belong to a plant pathologist, as far as I can tell), it's pretty difficult to tell the difference between a brown spot caused by phytotoxicity and a brown spot caused by a disease. However, brown spots from phytotoxicity are usually oblong or on tissue on which the material would have pooled, with the exception that damage from a small droplet may be circular. Brown spots from diseases are usually circular or oval if caused by a fungus, or are delineated from healthy tissue by leaf veins if caused by a bacteria. Often diseased tissue is a different color at the border where unhealthy

tissue meets healthy tissue, and the color is different in the middle of the spot.

3) Are all varieties affected to the same degree? If only certain varieties are affected, do they have something in common, like growth stage relative to a weather event? Usually with diseases, the incidence will vary with variety, but not necessarily with seasonality. If weather events were a problem, like the frosts we had last spring, blueberry varieties with the same harvest season were affected similarly. If all varieties were affected the same, the problem may have been environmental or cultural.

4) Can you see a pattern on the plant? Let's go through some possibilities. a) The whole plant is dead. This could be from a root disease, nematodes, grubs, or something that girdled the plant, so check the roots and crown area for symptoms. b) Tips of canes are dead. Could be winter injury, phomopsis twig blight, botrytis blight, or boron deficiency especially in lighter soils. c) Young or old leaves are affected the most. Could be a nutrition problem (see 5), as usually either older or younger leaves are affected, depending on which element is deficient or toxic. There could have just been more time for symptoms to accrue from a disease if older leaves look worse (also see 5), or something might have happened during a certain growth stage. Some insects, like aphids, prefer younger, more tender foliage. d) One or a few canes are affected. Check for borers, cankers or chew marks from voles on the affected canes.

5) Can you see a pattern on individual leaves? With nutritional problems or a translocated herbicide injury (this doesn't include burndown herbicides – they're different), the leaf would look relatively symmetrical – if you folded the leaf on the midrib, you would see the same coloration on the left half of the leaf as on right half, and in the same places, more or less. With nutrient deficiencies (Photo 1, below), the part that has access to more of the deficient element (near the midrib) stays



green, and yellowing or reddening first shows up between the smallest veins (hence the “Christmas tree effect” with iron deficiencies).

With diseases, spots on the leaves or canes are fairly random, because the disease develops wherever the spore lands. However, areas of the plant that have high moisture levels (areas of dense foliage, or the canes near their base) are likely to have greater disease problems. With injury from a burndown herbicide like paraquat, brown spots appear wherever the spray – including small droplets that may have drifted – contacted the leaves or bark. Entire young canes can be killed from contact.

If the problem is a disease organism, here are the common disease issues that we've seen in PA. We won't have room to cover insects here – but see info in this issue about a blueberry IPM workshop that will.

*Phomopsis twig blight and canker.* Tips of twigs die back, and the pith appears discolored. Cankers may appear in the crown area that can kill individual canes.

*Botryosphaeria stem blight.* Leaves turn yellow, then red, and then individual canes die. Eventually the entire plant may be killed. Young plants are most severely affected, as the entire plant can be girdled (Photos 2 and 3 below).



*Botryosphaeria stem blight canker progressing into healthy tissue.*



*Cross-section of stem with Botryosphaeria stem blight. Healthy tissue is light green.*

*Mummy berry.* Berries dry up and fail to mature, eventually resembling tiny gray pumpkins. They fall to the ground, and 1/4” mummy cups grow from them in the spring, which release spores that cause new shoots to wilt and turn brown. Spores released from infected shoots then infect flowers and thus fruit.

*Botrytis blight.* Any plant part can be affected, but most often blossoms and new growth are blighted. If the weather is wet, a gray mold may cover affected plant parts.

*Alternaria leaf spot.* Leaves develop tan to grayish spots, with lower leaves affected the worst. A black or dark-green mold appears on the blossom end of the berry before harvest.

*Anthraco nose fruit rot.* Canes and leaves can be affected with brown to black lesions (Photo 4, below left), but often the only symptom noticed is that after harvest, fruit develops a sunken area with orange to salmon-colored spores.

*Viruses and phytoplasmas.* Symptoms of viruses vary markedly depending on the virus, but can include mottling or crinkling of leaves, unusual leaf shapes and colors (Photo 5, below right), poor growth, reduced yields, and plant death.

*Phytophthora root rot.* Plants become defoliated and die in wetter areas of the field.

Additional information on cultural management such as site selection, pruning, and fertilization, symptoms and epidemiology of diseases, other problems, cultural controls and chemical controls, appear in the Mid-Atlantic Berry Guide, on-line at <http://pubs.cas.psu.edu/freepubs/MAberryGuide.htm> [and the New England Small Fruit Pest Management Guide at [www.umass.edu/fruitadvisor](http://www.umass.edu/fruitadvisor)].

Printed copies can be obtained in many county extension offices or ordered directly from Ag Publications by calling 877-345-0691. Cost for a printed copy is \$20 plus tax and a \$5 shipping/handling fee, with all major credit cards accepted.

An excellent resource for helping to diagnose problems is the Berry Diagnostic Tool, developed by folks at Cornell University, North Carolina State University, and the Small Fruit Germplasm Repository in Corvallis, found at <http://www.fruit.cornell.edu/berrytool/index.html>. These resources and more can also be accessed from the PSU Small Fruit web site, located at <http://smallfruits.psu.edu/>.

(Source: *The Pennsylvania State University Vegetable & Small Fruit Gazette, Volume 14, No. 9, September 2010.*)

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## GRAPE

### A Rogues Gallery of Grape Rots

Janna Beckerman, Purdue University

The unusually wet summer in parts of the state has resulted in serious problems at harvest. This article is a rogues gallery of rots. Many of these rots also infect the foliage or the vines. However, for this article, only fruit symptoms will be discussed here.

#### *Anthraco nose*

Anthraco nose, reduces the quality and quantity of fruit and weakens the vine. The fungus, *Elsinoë ampelina*, causes grape anthracnose. All green parts of the plant, including fruit stems (peduncles), leaves, petioles, tendrils, young shoots, and berries, can be attacked. Fruit are susceptible to infection any time prior to flowering through veraison, the when the berries begin to ripen. This means that infection may have occurred many weeks, or even months before the infection appears. Most growers are more familiar with the ‘birds eye rot’ symptoms of infection. Unfortunately, these symptoms were not observable this year in many vineyards, nor was it observed on any of the cultivars that we identified infected by the anthracnose fungus at Meig’s Farm this week (Figure 5).



Figure 5. Grape anthracnose at Meig’s.

One possible reason the typical symptoms were not observed is that the unusually wet weather prevented the plants’ normal response to infection. Because the fruit was growing so quickly, it was not able to adequately protect itself from the disease. In a more “normal year”, small, reddish circular spots develop on infected fruit, enlarge and may become slightly sunken. The centers of the spots develop a pale gray cast and become surrounded by narrow reddish-brown to black bands, resembling a bird’s eye (Figure 6).

Identification of this and other grape rots require a microscope—they all look alike to the naked eye! Small,

erumpent structures called acervuli develop in the lesions and exude a pinkish mass of spores during wet weather. For more information on grape anthracnose, see: [http://ohioline.osu.edu/hyg-fact/3000/pdf/HYG\\_3208\\_08.pdf](http://ohioline.osu.edu/hyg-fact/3000/pdf/HYG_3208_08.pdf)



**Figure 6.** Typical grape anthracnose symptoms

#### *Bitter Rot*

This disease is so named for the bitter taste it imparts to infected berries. This unpleasant taste carries over to wine reducing its quality. The bitter rot fungus, *Greeneria uvicola* invades fruit stems (pedicels) where it remains until the berry ripens. Bitter rot is primarily a disease of ripening fruit; immature fruit are not affected. In addition to fruit, susceptible tissues include foliage, tendrils, stems, and fruit clusters.

Fruit symptoms begin as a brownish watersoaked spot. As the fungus continues to invade the fruit, the lesion expands rapidly and a soft rot develops. Tiny, black erumpent masses of fungi (acervuli) appear as specks in the rotted area, often forming concentric circles.

#### Black rot

Black rot continues to be the most important grape disease in Indiana. Without an effective disease management program, any type of grape production is severely limited. The disease attacks all parts of the grape, but fruit symptoms start as soft, light brown spots on green fruit that rapidly enlarge to involve the entire berry. Like the other diseases mentioned, affected grapes then shrivel into black, wrinkled mummies (Figure 7) covered with black pimply fungal fruiting bodies (pycnidia). The black rot fungus, *Guignardia bidwellii*, infects early in the growing season. However, fruit symptoms often do not appear until grapes are half grown. Small, light brownish spots form on the fruit. The rotted tissue in the spot softens and becomes sunken. The spot enlarges quickly, rotting the entire berry in a few days. The diseased fruit shrivels, becoming small, hard, black, and wrinkled. Raised, black spore-producing structures of the fungus

form on the blackened, shriveled fruit. Mummies usually remain attached to the fruit cluster.



**Figure 7.** Black rot of grapes

#### *Botrytis Bunch Rot*

Botrytis bunch rot, also called the Noble Rot, occurs wherever grapes are grown. This fungus, *Botrytis cinerea*, also causes a decay of fresh market grapes in storage.



**Figure 8.** Early Botrytis infection on Riesling.

Symptoms of botrytis infecting the fruit include a soft, watery decay of ripening berries (Figure 8). After the first one or a few berries within the cluster become infected, the fungus spreads to nearby adjacent healthy berries. In this way, Botrytis can spread rapidly throughout the cluster, with infected berries of white cultivars becoming brown and shriveled while those of purple cultivars develop a reddish color. Eventually, if weather conditions are conducive, the entire bunch is rotted and covered with a fuzzy grey mat of spores (Figure 9).



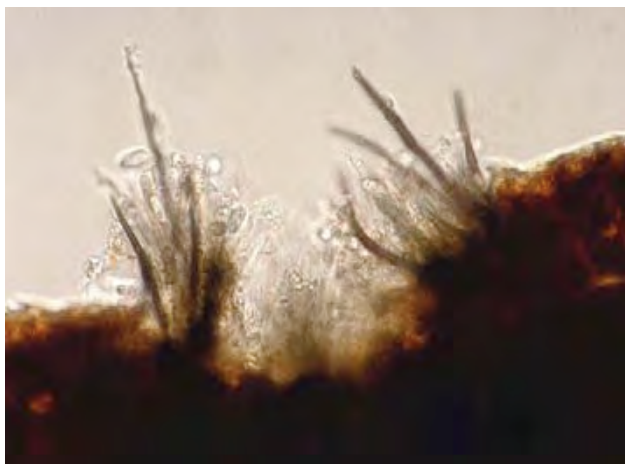
**Figure 9.** Sporulating *Botrytis*.

### Ripe Rot

The fungus that causes ripe rot has both a sexual and asexual stage. As a result, it has two names, *Colletotrichum gloeosporioides* describes the asexual state that some people may be seeing now. It's sexual state that infects in the spring and starts the life cycle, and is named *Glomerella cingulata*. Yes, this two name business is confusing.

This disease occurs on ripened berries at or near harvest. This fungus also causes bitter rot on apples. And avocado. And blueberries. And strawberries...and I can keep going...but suffice to say it has been found infecting 23 fruit varieties in Sri Lanka, alone. Who knows what it can do here! It is an opportunist of tremendous proportions.

Ripe rot symptoms begin as brown, circular lesions develop on ripening fruit, eventually covering the entire berry. Like with anthracnose, tiny black pimply structures called acervuli develop in the infected fruit and ooze salmon-colored spores. However, careful microscopic examination of the fruiting body reveals black, horse-hair like structures called setae (Figure 10), distinguishing this fungus from *Elsinoë* and several other. Thus, careful microscopic examination for the diagnosis of grape rots is essential!



**Figure 10.** Setae are used to discriminate between infections of ripe rot and anthracnose.

### Sour Rot

Sour rot is a disease complex that impacts both grape yield and wine quality. A disease complex is when more than one organism is involved with causing the disease. In this case, yeasts, bacteria, and opportunistic fungi are commonly found in association with sour rot. Infection usually begins with wounds; these wounds can be caused by insects, hail, birds, and even other pathogens. Tight clustered varieties and cultivars with thin skins tend to be more susceptible to this late season disease. This disease can be mistaken for botrytis rot as both begin as soft watery rots. However, over time, grapes begin to leak juice, and this rot takes on the characteristic vinegar odor.

Although it is too late to manage these disease problems this year, there are tactics that can be employed to prevent or at least minimize these diseases for next year. These include:

### Cultural Management

- Grape cultivars vary in their susceptibility to fruit rots. Resistant cultivars can reduce disease pressure and minimize your reliance on fungicides. Botrytis bunch rot and sour rot are generally more of a problem on cultivars like Chardonnay, Limberger, Riesling, Seyval, and Vignoles, and the table grape Reliance which are examples of thinned skinned or tight-clustered varieties.
- Vineyards should be sited in such a way to improve air circulation and drying characteristics. As such, avoid low-lying, poorly drained sites. Site rows toward the prevailing winds to facilitate drying.
- Opening up the canopy not only improves fungicide spray penetration, but it also promotes drying of plant tissues and increases sunlight penetration.
- Manage weeds to improve drying.
- Protect against insects and birds.

### Sanitation

- Prune out and destroy (remove from the vineyard) diseased shoots, cluster stems, and berries during the dormant season. Remove all mummies at the end of the season.
- Eradicate wild grapes near the vineyard whenever possible so they do not provide an inoculum reservoir for the disease.

### Fungicides

Fungicide use should be implemented when cultural practices fail to provide the level of control needed. Refer to Midwest Commercial Small Fruit and Grape Spray Guide (ID-94) for the appropriate fungicides. It is available on-line at:

[http://www.ag.purdue.edu/hla/Hort/Pages/sfg\\_sprayguide.aspx](http://www.ag.purdue.edu/hla/Hort/Pages/sfg_sprayguide.aspx)



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(*Source: Facts for Fancy Fruit, Vol. 10, Issue 10, Sept. 14, 2010*)

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## GENERAL INFORMATION

### **Challenges of Growing Fruits and Vegetables in Plastic Tunnels – Webinar Series**

*Hannah Stevens, Michigan State Univ.*

In cold climates such as Michigan, gardeners and growers have had success with lengthening the growing season in spring and fall by using row covers, low tunnels and various types of greenhouses. More recently, a trend towards buying local has lead some producers to explore on-farm winter storage as well as the production of fresh greens that survive and thrive in these structures during the winter. High-tunnel production can lengthen the growing season and provide producers with a means to enter the market earlier with high value crops. This has the potential to expand the availability of healthy locally grown crops. In addition, in several states, including Michigan, there are incentive dollars available to growers who would like to try high tunnel production systems.

Pest problems and their management in greenhouses and high tunnels are different than field grown fruits and vegetables, and an understanding of those differences is needed to capitalize on early and late season markets. Soil, water and nutrient management are also unique to these systems and markets for these crops need to be developed and well understood. [MSU Extension](#) would like to invite interested growers to a webinar series sponsored by the [Great Lakes Vegetable Working Group](#), the [University of Illinois Extension](#), and a Sustainable Agriculture Research and Education Professional Development grant. These programs include five 1-2 hour webinars produced on November 1, 3, 8, 16, and 18. You can view the webinars at home via your computer or at the suggested places set up throughout the state.

Webinar One (November 1, 6:30-8:30 PM) will provide an overview of season extension methods and economics and weed, insect and disease control.

Webinar Two (November 3, 6:30- 8:30 PM) will address production systems for tomatoes and related crops, cultural, organic and other pest control methods as well as grafting techniques.

Webinar Three (November 8, 6:30- 8:30 PM) will include an overview of winter crop production systems including a discussion of economics, sanitation, plastic management, production sequences, crop selection, sanitation for a simple hoophouse, greenhouse, inground, in container, row covers, and low tunnels. Pest management and storage will also be discussed.

Webinar Four is titled “Management of Nutrients, Water, Soil, and Other Production Considerations in High Tunnels” and will be broadcast November 16 at a different time than the previous three webinars. This will be a brown-bag lunch webinar airing from 1:00-2:00 PM. The first 50 participants or organizations to include webinar four as part of their registration, will receive a free copy of the “High Tunnel Production Manual” published by Penn State.

Webinar Five is titled “Interpreting NRCS High Tunnel Project Guidelines.” This will also be a brown-bag lunch webinar on November 18 from 1:00- 2:00 PM and will clarify the support available through the EQIP program.

Pre-registration for this webinar series is mandatory and can be found at [http://www.surveymonkey.com/s/season\\_ext](http://www.surveymonkey.com/s/season_ext). The cost for the series is \$30 whether you attend one or all five webinars. Each webinar will be recorded and available on several state IPM or vegetable oriented websites for viewing soon after its original airdate. For people who do not have a broadband connection, we are identifying several places throughout each state to host the webinar series.

For more information, please check out: <http://bit.ly/plastictunnels>

(*Source: Michigan Fruit Crop Advisory Team Alert. September 21, 2010 -- Vol. 25, No. 18*)

### **Early Fall Weed Control in Berry Crops**

*Laura McDermott, Cornell Cooperative Extension*

September is a good time to go after weed problems in berries. Despite the fact that there isn't a large selection of herbicides to choose from, making sure that your timing is appropriate will make a difference in your results.

**Strawberries:** For first year strawberries, you can use DCPA (Dacthal) at 12 lb/A, or 8 lb/A if you have sandy soil. Don't expect a lot from this material, but if you are really struggling with weed issues, it might give you some

relief. Dacthal can also be used in fruiting berries, but you have some better choices in Sinbar or napropamide (Devrinol) for winter annuals. Both of these products are limited as to the amount you can apply in one year. Sinbar has a limit of 8 oz/A/ growing season and Devrinol is limited to 8 lb/A/growing season. From grower reports in the Capital District, Sinbar is the most effective material of these three, but it does have some drawbacks. Most notably it needs to be watered in and it should not be used on low organic matter soils. Additionally, some berries show sensitivity to Sinbar. The ones listed in the Cornell Berry Guidelines are: Guardian, Darrow, Micmac, Tribute and Tristar. Honeoye has been reported as sensitive as well and there is a possibility that Sinbar increases root rot in that variety. Glooscap, Kent and Cavendish are also mentioned as being sensitive in the Midwest Small Fruit Pest Management handbook. If you have problems with thistle, then apply clopyralid (Stinger) right after the thistles have dropped their seed. Make sure to have the Special Local Need label in your possession when you apply Stinger on strawberries.

**Brambles:** Chemical weed control in brambles is tricky. These plants are very touchy; it is so easy to burn and stunt them with improperly applied herbicides. Handle your strawberry and blueberry weed control first and then in later September and into October concentrate on brambles. For weed control in the fall of the planting year,

you can use simazine (Princep) at the low rate (2.2 lbs or 2 qt/A depending upon the formulation), but wait until October to apply. For fruiting canes you have more choices. Sinbar, Devrinol, norflurazon (Solicam), oryzalin (Surflan) and Princep are all labeled for autumn use. If you are using Sinbar, apply the recommended rate of product with at least 20 gallons of water per acre. Spray underneath well established bushes, but be prepared for some leaf burn. For primocane berries, you can only use Sinbar in the fall. Other materials all have caveats surrounding their use including seasonal limits on Solicam and Princep and cautionary statements for light soils (Solicam) or highly organic soils (Surflan). You also need to water in Devrinol.

**Blueberries:** First year blueberries may benefit from a low rate of Princep applied in late October, but most weed problems can be addressed in November. For fruiting blueberries you can apply Sinbar after harvest or choose from Devrinol, Solicam, Surflan or Princep. Similar caveats apply for these materials as were mentioned in the bramble section. Truthfully blueberries rarely need to have weeds addressed at this early fall time, as the products used in late fall (Callisto, Chateau, Kerb and Casoron) do a very effective job in combination with a good mulch program. (**Source:** *New York Berry News*, Vol. 9, No. 9, Sept. 2010)

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## UPCOMING MEETINGS:

**Sept. 30, 2010.** *Cover Crops for Soil Health.* Univ. of Vermont Extension. Brattleboro, VT. 4:00 – 7:00. Free and open to farmers and gardeners. For more information see: <http://www.uvm.edu/vtvegandberry/meetings/covercropbrat9-30-10.html>.

**Nov. 3-4, 2010.** *Northeast Greenhouse Conference and Expo, 2010.* DCU Center, Worcester MA. For more information, go to: <http://www.negreenhouse.org/>.

**November 5, 6, & 7 2010.** *Maine Organic Farmers & Gardeners Association Farmer to Farmer Conference.* Point Lookout Resort, Northport, ME. Registration closes Oct. 8<sup>th</sup>. For more information see <http://www.mofga.org/Default.aspx?tabid=293>

**Nov. 8, 2010.** *GAPS Food Safety Planning Workshop for Growers.* UVM Extension. Colchester VT. More information available soon.

**November 8-10, 2010.** *Southeast Strawberry Expo*, at the Wyndham Hotel in Virginia Beach, VA. Workshops and farm tour on Nov. 8, educational sessions and trade show on Nov. 9-10. For more information, visit [www.ncstrawberry.com](http://www.ncstrawberry.com) or contact the NC Strawberry Association, 1138 Rock Rest Rd., Pittsboro, NC 27312, 919-542-4037, [info@ncstrawberry.com](mailto:info@ncstrawberry.com). Exhibitor inquiries welcome.

**November 22, 2010.** *USDA Good Agricultural Practices (GAP) Training Program.* UMass Extension and Mass Dept. of Ag Resources. Farm Bureau Federation Office, 249 Lakeside Drive, Marlboro, MA 01752. 12:30 PM – 5:00 PM. Registration deadline: 11/12/10. For more information contact Doreen York at [dyork@umext.umass.edu](mailto:dyork@umext.umass.edu)

**December 2, 2010.** *USDA Good Agricultural Practices (GAP) Training Program.* UMass Extension and Mass Dept. of Ag Resources. Sheraton Springfield/Monarch Place Hotel, One Monarch Place, Springfield, MA 01144. 12:45 PM – 2:30 PM; 3:30 PM – 4:45 PM. Registration deadline: 11/19/10. For more information contact Doreen York at [dyork@umext.umass.edu](mailto:dyork@umext.umass.edu)

**December 7-9, 2010.** *Great Lakes Fruit Vegetable and Farm Market EXPO*, DeVos Place Convention Center, Grand Rapids, Michigan. For more information: <http://www.glexpo.com>.

**Dec. 10, 2010.** *GAPS Food Safety Planning Workshop for Growers.* UVM Extension. White River Jct. VT. More information available soon.

**January 6-7, 2011.** *NARBA (North American Raspberry and Blackberry Growers Association) Annual Meeting*, Savannah, GA. For information see <http://www.raspberrylblackberry.com/> or contact Debby Weschler at E-mail: [info@raspberrylblackberry.com](mailto:info@raspberrylblackberry.com).

**January 31 – February 3, 2011.** *Mid-Atlantic Fruit and Vegetable Convention* at the Hershey Lodge in Hershey, PA. For more information visit [www.mafvc.org](http://www.mafvc.org).

**February 8-11, 2011.** *7th North American Strawberry Symposium and joint North American Strawberry Growers Association Meeting*. Tampa, Florida. Details available soon.

**March 5, 2011.** *Planting, Cultivating, and Marketing Juneberries in the Great Lakes Region*. NYS Agricultural Experiment Station, Geneva, NY. More information available soon.

**June 22-26, 2011.** *10th International Rubus and Ribes Symposium, Zlatibor, Serbia*. For more information contact: Prof. Dr. Mihailo Nikolic, Faculty of Agriculture, University of Belgr, Belgrade, Serbia. Phone: (381)63 801 99 23. Or contact Brankica Tanovic, Pesticide & Environment Research Inst., Belgrade, Serbia. Phone: (381) 11-31-61-773.

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