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Crop conditions, current growth stages

(Bruce Bordelon, bordelon@purdue.edu, (765) 494-8212) & (Peter M Hirst, hirst@purdue.edu, (765) 494-1323)

Grape harvest has began in the southern part of the state and will begin in central areas over the next week or so. Early varieties are nearing full maturity while late varieties are just at, or not yet at veraison. Overall fruit quality looks excellent. Apple harvest continues. Summer varieties are mostly done and early fall varieties are almost ready. Primocane fruiting blackberry harvest continues into its second week on Black magic, with APF-45 not yet ready. First crop of Heritage and Caroline primocane fruiting raspberries are ripening this week. Pressure from spotted wing Drosophila and Japanese beetles in brambles is still very high and growers should continue control measures. Incidence of white drupelet disorder is common due to the high temperatures this year. Strawberry plantings are under considerable stress from heat and lack of moisture. Irrigation is highly recommended especially as fruit bud development nears.



Chambourcin grapes just beginning veraison



Traminette grapes are at veraison



Marquette grapes near full harvest maturity



Zestar apples ready to harvest



Silken apples ready to harvest



Black Magic primocane fruiting blackberry at harvest



Heritage raspberries at harvest

Symptoms of flyspeck and sooty blotch

(Janna L Beckerman, jbeckerm@purdue.edu, (765) 494-4628)

The symptoms of flyspeck and sooty blotch have begun to make their appearance. I know this because 1). I'm starting to see spots, and 2). We have accumulated MORE THAN enough hours of post- petal fall leaf wetness needed for infection to occur.



On no-spray or poorly managed orchards, flyspeck and sooty blotch are probably the least of your problems.

First, what is enough hours of post- petal fall leaf wetness needed for infection to occur? Different states have developed different levels and standards, with highs of 270 hours (hours must be greater than 4 hrs to be counted) needed in North Carolina, compared to 175 period identified in Iowa. In Kentucky, John Hartman found 185-251 hours were needed, but did not stipulate that a minimum of 4 hrs was required to accumulate leaf wetness. We have not yet developed a guideline for Indiana. In the interim, using either the Iowa or Kentucky model may reduce your fungicide usage in a normal year. For much of Indiana, 'normal' is a state we hear about—a utopia between our extremes of tropical rainforest (2015, 2016) and drought (2012).

Sprays: Topsin-M tanked with captan is an effective combination (Ziram is another option). However, some orchards may be experiencing Topsin-M resistant flyspeck and sooty blotch populations. If you suspect you are one of those orchards with SBFS fungicide resistance, or you were late getting started, use Flint or Pristine to eradicate any infections that may have started. Thereafter, captan alone at appropriate intervals (2 weeks or 2 inches off rain; 10 days or 1.5 inches of rain) should provide fair to good control. If disease pressure is high, and you haven't exceeded your four applications of

strobies, Pristine or Flint all provide the best protection against this disease complex. We do not know if these fungicides are protecting against the disease, or are effective eradicants, but we do know that they work quite well against this complex.

Tissue analysis for grapes and small fruit

(Bruce Bordelon, bordelon@purdue.edu, (765) 494-8212)

Plant nutritional status is important for all phases of plant growth and has a direct effect on vigor, fruitfulness, cold hardiness, and other factors. Tissue analysis is the most reliable means of determining plant nutritional status. Combined with soil testing, tissue analysis can help pinpoint the source of problems and determine what measures may be needed to insure proper nutrition of the crop. Tissue analysis samples should be collected at the appropriate time to give the most meaningful results. For strawberry, sample the first fully expanded leaves after renovation, usually in mid to late July. For brambles, sample leaves on non-fruiting canes (primocanes) between August 1 and 20. For blueberries sample leaves during the first week of harvest. For grapes, samples should be taken about 70 days after full bloom, usually early to mid August. Samples should be adequate in size. Collect 30-60 leaves for strawberries, brambles, and blueberries, and 100 leaf petioles for grapes (for grapes submit only the leaf petiole, or stem, for analysis, discard the leaf blade). Collect samples to represent the entire field, not just from a few plants. Sample different varieties separately. If specific problems exist, collect separate samples from both normal and problematic areas of the planting. After collection, leaves should be washed gently to

remove any pesticide residues and dust that might affect analysis, laid out to dry for a couple of days, then bagged in paper bags for submission to the lab. Some labs offer tissue analysis sample kits.

There are several private companies and a few universities that provide tissue analysis. A list of certified soil and plant analysis testing labs serving Indiana growers is located at http://tinyurl.com/hm2b3q2

The Midwest Small Fruit Pest Management Handbook has a chapter on tissue analysis and fertilizer recommendations.

Grape harvest 2016

(Bruce Bordelon, bordelon@purdue.edu, (765) 494-8212)

Grape harvest is just getting started in the southern part of the state. Early varieties have been harvested for the past week. Most varieties are slightly ahead of normal this year. Fruit quality overall is very good. Many vineyards are still recovering from the winter of 2014 so yields will still be below normal.

With wine grapes, all fruit of a given cultivar is typically harvested from the vineyard or block at a single time to coordinate winery activity and to reduce costs. It is important to plan carefully so that the harvest date coincides with the optimum fruit quality.

Most vineyards have some degree of variability in soil type and drainage, sunlight exposure, wind, insect and disease pest, nutritional status, etc. These variations can result in large differences in fruit ripeness and quality. Fruit from different parts of the block, from adjacent vines, as well as from different parts of the same vine can vary. Much of the variability can be reduced with proper vineyard management, e.g. cluster thinning, shoot thinning, canopy management, etc.

As harvest nears, it is very important to monitor grape chemistry. Growers should sample weekly leading up harvest with a protocol to collect a representative sample of fruit from the entire vineyard. This can be a sample of 200 berries per block collected from vines randomly, but with emphasis on collecting berries from top, middle and bottom of clusters, and from exposed and shaded clusters. Some growers prefer to collect a sample of whole clusters rather than individual berries to capture the variability within clusters. Whatever approach is used, be sure to compare your sampling results to the actual final harvest juice parameters to determine the accuracy of your sampling. Most of the time samples tend to over estimate the level of fruit maturity.

Fruit quality is comprised of several factors, the most important of which are sugars, organic acids, and pH. Other factors such as phenolics, anthocyanins, aroma and flavor compounds can be very important to wine quality as well. And of course, freedom from rots is an important consideration. Unlike some other fruits, grapes do not continue to ripen after harvest. Consequently, it is important to harvest grapes at the peak of quality and with the desired parameters for the intended use.

Wine grape growers should have the ability of measure sugar content (with a refractometer), titratable acidity and pH (with a pH meter and burette). Equipment and supplies to measure these parameters can be purchased for about \$500. Each of these factors is important for determining proper harvest time, but none alone can accurately estimate overall fruit quality. It is the balance of sugars, acids and juice pH that is important to the wine maker. And of course, there are the subjective qualities of seed and skin maturity, tannins, anthocyanins, flavors, aromas, etc. The Berry Sensory Analysis method addresses evaluation of these more subjective

factors such as skin, pulp and seed maturity. More needs to be done to adapt the method for use with our Midwest varieties, but as a descriptive tool, it can be an excellent way for growers to go beyond the basics of sugar, acid and pH.

Bird pecks, cracks from rain, and bee damage can lead to sour rot and its vinegar spoilage bacteria. The vinegar (acetic acid) leads to high volatile acidity levels in the wine. Growers need to closely monitor for development of sour rot and take measures to reduce the spread by managing fruit flies. Ultimately it may be necessary to develop a strategy to minimize harvest of rotted clusters. A pre-harvest walk through the vineyard block should identify any clusters with sour rot and those lagging in ripeness. In most cases, late clusters will never catch up to the rest, and will only reduce the overall quality of the crop at harvest. Now is a good time to drop any undesirable fruit. Don't expect your harvest crew to sort as they pick. Go through beforehand and eliminate the guesswork.

Strawberry fruit bud development

(Bruce Bordelon, bordelon@purdue.edu, (765) 494-8212)
June bearing strawberries are "short day" plants that set flower buds in response to short days. As we get into late summer, days shorten and strawberry plants respond by setting the flower buds that will result in the crop next spring. It is important to maintain appropriate nutrition and soil water status during this time. General recommendations are to fertilize strawberry fields with 20 to 50 pounds of actual nitrogen per acre. Nitrogen rates depend upon amount supplied at renovation and plant vigor. New fields

with high vigor may not need additional nitrogen now, but older fields should benefit. Irrigation during this time is also extremely important if rainfall has not been sufficient in your area. We suggest about 1 inch per week. Continue to irrigate strawberries through fall to assure a good crop next year. Also maintain good leaf health by controlling leaf diseases.



Strawberry crown

Spotted Wing Drosophila

(Ricky E Foster, fosterre@purdue.edu)

Spotted wing drosophila continue to plague raspberry, blackberry, blueberry, and grape growers. I have had some reports of poor control. There are a number of reasons that control of any insect may be poor. If you are not getting the level of control you expect, here are a few things to consider.

- 1. Is your sprayer calibrated correctly? Are you putting on the right amount of insecticide?
- 2. Is your coverage adequate? Yellow water sensitive cards can be an economical way

- to determine is the spray is getting where you need it to be.
- 3. What is the pH of your water? If it is too high, you may need to adjust it to get down close to 7 or below.
- 4. How hard is your water? If the hardness level is 250 or higher, you may need to soften the water before mixing the insecticide.
- 5. What is the interval between sprays? For this insect, weekly sprays appears to be the bare minimum. Some growers are spraying twice weekly and getting good results, but an interval of 4-5 days should be sufficient in most cases. I know that's pretty close to twice per week but over the course of the season you might save a spray or two.

Growers should expect to continue spraying to control SWD until the end of the season. Our data so far show that they remain active as long as you are picking.

Upcoming events

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Indiana Horticultural Congress at the NEW LOCATION January 10-12, 2017

Indianapolis Marriott East Hotel, 7202 East 21st Street, Indianapolis, IN 46219.

Purdue Wine Grape Team Fall

Workshop: Purdue Meigs Horticulture Research Farm and West Lafayette campus. More information to follow.

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