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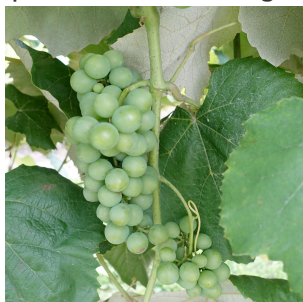
GoldRush apple fruit approx. 2" diameter

Crop Conditions

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



Fruit set in primocane fruiting blackberries



Bunch closure in grapes

Watch for Dicamba Drift in Fruit Crops

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

By now almost everyone has heard about dicamba, the volatile growth regulator herbicide that has garnered so much attention the past couple of years. It is being used over the top of dicamba-tolerant soybeans on thousands of acres in the state this year. We are trying to keep track of off-target damage so we would like to hear from growers that see any typical symptoms. Grapes are one of the most sensitive crops to dicamba, though there is a wide range of sensitivity among varieties. But they are not the only fruit crops that are sensitive. Raspberries, blackberries, blueberries, and tree fruit are also sensitive. Dicamba typically causes upward leaf rolling on new growth (see pictures below). If you see this type of damage in your fruit plantings, please contact your local Purdue Extension Educator or one of the specialists that write this newsletter. The more we know about the extent

of damage, the better we can advise regulators on reducing off-target movement.



Typical upward leaf rolling on new grape growth indicative of exposure to dicamba herbicide



Dicamba damage in black raspberry



Dicamba damage on Ouachita blackberry

Tissue Analysis for Small Fruit and Grapes

(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 rinsed gently in tap water 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

https://ag.purdue.edu/agry/extension/Pages/soil_testing.aspx

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

<https://ag.purdue.edu/hla/Hort/Documents/Midwest%20Sm%20Fruit%20861%201-24-11.pdf>. I suggest growers refer to that chapter when reviewing tissue analysis results and recommendations.

Japanese Beetles

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

Japanese beetles appear to be especially abundant this year. They started showing up a couple of weeks ago and are now numerous in many areas. This past year Japanese beetle populations were higher than they have been for a number of years and this year looks to be a repeat. We've seen severe damage to small fruits, grapes, as well as the Pristine apples, plums, etc. Adult beetles are relatively easy to control, but after insecticide treatment to knock them down, populations reappear as the insecticide wears off. So, it may require more than one application to control them. Sevin and the pyrethroids will provide the best control, although Sevin may only give about 3 days of protection. Watch pre-harvest intervals (PHIs) in small fruits if harvest is on-going. And note that the REI for Sevin can be 2 to 6 days in grapes.

One note about damage: It often looks a lot worse than it really is. Beetles tend to congregate along edge rows or row ends adjacent to grassy areas. Don't assume the pickup truck view of the planting is representative of the entire acreage. Another issue is that Japanese beetles feed primarily on the upper leaves of most plants. Grapes can withstand a significant amount of defoliation

without significant loss of yield or fruit quality. The same can be said for apples and other tree fruit. However, in some cases the damage can result in direct loss of yield or fruit quality. Raspberries can be severely affected by uncontrolled feeding. And in some crops, such as primocane fruiting blackberries, Japanese beetles feed directly on flowers, reducing potential yield considerably. In blueberries and peaches they feed directly on ripening fruit leading to a direct loss of yield and reduction in fruit quality. Get out of the truck and scout your planting today!



Japanese beetle feeding damage in red raspberry



Japanese beetles on red raspberry



Japanese beetles feeding on PF blackberry flowers



Japanese beetle feeding damage in grapes



Figure 3. This pathogen can be mistaken for Golden Delicious necrotic blotch. Photo by Janna Beckerman

Glomerella Leaf Blight

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

Glomerella leaf blight seems to be rearing its ugly head. Symptoms include lesions with concentric rings in them that can grow together and give the leaf a blighted appearance (Fig. 1). Leaves may yellow and fall off (Fig. 2) and may appear like Golden Delicious necrotic leaf blotch on a variety of apple cultivars (Fig. 3).



Figure 1. Radiating bands within the lesions are a characteristic of Glomerella. Photo by Janna Beckerman



Figure 2. Significant leaf drop can affect some varieties. Shown here is 'Princess', which is almost defoliated by the most recent outbreak. Note fallen mummies and thick, weedy undergrowth. Photo by Janna Beckerman

Before anyone panics, *Glomerella* is not a new pathogen, but the sexual state of a fungus that was first identified in its asexual state and was named *Colletotrichum*. Fungi known to infect apples and belonging to this group (genus) cause bitter rot. Previously, the bitter rot pathogens were divided into two species complexes: *C. acutatum* and *C. gloeosporioides*. Recent work in Kentucky found five different species of *Colletotrichum* associated with bitter rot: *C. fioriniae*, *C. nymphaeae*, *C. siamense*, *C. theobromicola*, and *C. fructicola*. The relationship between bitter rot and Glomerella leaf spot, if any, is not all that clear here in Indiana. Or anywhere.

Colletotrichum species are cosmopolitan fungi (by this, I mean they grow everywhere, not that they are found in vodka-based drinks) and infect almost everything (fruit, vegetables, flowers, etc.). It isn't clear if the fungi that infect leaves also infect fruit on the tree, but we do know that they are all capable of causing post-harvest rot on wounded fruit in storage.

For now, keep your eyes peeled and below is a list of fungicides that are effective in controlling this disease, provided applications are made to protect growing fruit and that fungicides are reapplied after rain events that provide more than 1-2 inches of precipitation. At Meigs, trees that had better pruning and increased air flow had less Glomerella than overgrown trees.

Trade Name	Active ingredient	Pre-harvest interval -PHI (days)	FRAC Code
Roper, Koverall	Mancozeb	77 (3 lb/A rate only)	M3
Flint 50WG	Trifloxystrobin	14	11
Luna Sensation	Trifloxystrobin + Fluopyram	14	11+7
Ziram DF	Ziram	14	M3
Merivon	Pyraclostrobin + Fluxapyroxad	0	11+7
Pristine WG	Pyraclostrobin + Boscalid	0	11+7
Captan 80WDG	Captan	0	M4

Successful Summer Field Day at Garwoods

(Peter M Hirst, hirst@purdue.edu, (765) 494-1323)

Thanks to all members of the Garwood family and staff who hosted us for the summer field day last week. Growers were inspired by the excellent job Garwoods do with fruit and vegetable production and marketing. The fruit, vegetable and farm marketing industries in the state were well represented, and all in attendance appreciated members of the Garwood family sharing their many successes and a few challenges along the way. Thanks to Brian and all members of the Garwood family and staff for their hospitality.

Sincerely,
Peter Hirst



Upcoming Events

(Lori K Jolly-Brown, ljollybr@purdue.edu)

July 17-18, 2018 Indiana Winery and Vineyard Association Summer Meeting

Brown County Inn, Nashville, IN

Contact <https://indianawinevine.org/events> to register

August 30, 2018 Small Farm Education Field Day

Purdue Daniel Turf Center

Contact Lori Jolly-Brown, ljollybr@purdue.edu or 765-494-1296

Register here: <http://www.cvent.com/d/hgqx6g>

September 5, 2018 Greenhouse & Indoor Hydroponics Workshop

Purdue University, PFEN 1159 & Purdue Horticulture Greenhouse

Contact Lori Jolly-Brown ljollybr@purdue.edu

Register here: <https://tinyurl.com/yaxd4k2z>

October 17, 2018 Indiana Flower Growers Conference

Daniel Turf Center

Contact Lori Jolly-Brown ljollybr@purdue.edu

January 8, 2019 Illiana Vegetable Growers Symposium

Teibel's Family Restaurant, Schererville, IN

Contact Liz Maynard emaynard@purdue.edu
<https://ag.purdue.edu/hla/Extension/Pages/IVGS.aspx>

February 12-14, 2019 Indiana Hort Congress

Indianapolis Marriott East Indianapolis, IN

Contact Lori Jolly-Brown, ljollybr@purdue.edu or 765-494-1296

<http://www.inhortcongress.org>

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