



**In This Issue**

- [Phomopsis cane and leaf spot in grapes](#)
- [Summer tipping brambles](#)
- [Leaf removal in grapes](#)
- [Codling Moth](#)
- [Plum Curculio in Almonds](#)
- [Fire Blight](#)
- [Upcoming Events](#)
- [Apple Chemical thinning](#)
- [Apple June drop](#)
- [Summer Hort. Society meeting](#)
- [Current Growth Stages in Lafayette, IN](#)

## Phomopsis cane and leaf spot in grapes

(Bruce Bordelon, [bordelon@purdue.edu](mailto:bordelon@purdue.edu), (765) 494-8212)

The weather this spring has been ideal for development of Phomopsis cane and leaf spot. The past few weeks have been cool with frequent showers, and shoot growth has been slow. These conditions favor sporulation and infection by Phomopsis. This pathogen is one of the major causes of fruit rot in the Midwest. Early season infections of shoots, cluster rachises and berry stems remain latent until veraison. Then as the fruit begins to ripen, the fungus resumes development and infects berries and girdles cluster stems. Damage can be severe and fruit quality greatly diminished. If a few sprays were missed and infections have occurred, infected shoots should be removed during shoot thinning to minimize problems later. Now that the weather is warmer, new infections are less likely. But, any infected shoot can result in fruit rots later. Remove those during shoot thinning if possible.



Phomopsis shoot and rachis infection



Phomopsis leaf spot



Phomopsis shoot infection



Phomopsis rachis infection and berry rot

## Summer tipping brambles

(Bruce Bordelon, [bordelon@purdue.edu](mailto:bordelon@purdue.edu), (765) 494-8212)

Tipping of primocanes (new vegetative canes from the ground) is an important management practice for summer bearing blackberries and black raspberries. Tipping the new primocanes causes lateral branching and most of the fruit production next year will be from buds on those lateral branches rather than buds off the main cane. Tipping also helps increase the diameter and strengthen the main cane. Height to tip is relative to vigor. Vigorous thornless blackberries can be tipped at 40-48 inches for best results. Black raspberries should be tipped no higher than 30-36 inches to help develop a stout cane capable of supporting itself. Ideally primocanes should be tipped as they reach the appropriate height with minimal tissue removed. Just pinch or

break the tip off. However, if some canes have escaped notice and are taller than desired, it's still preferable to tip at the appropriate height, even if that means removing a foot or more of cane. Tipping red raspberries and all primocane fruiting brambles is not recommended.



Primocane before tipping



Development of lateral branches below tip



Well branched primocane

## Leaf removal in grapes

(Bruce Bordelon, [bordelon@purdue.edu](mailto:bordelon@purdue.edu), (765) 494-8212)

Immediate post-bloom through about 3 weeks post bloom is the most effective time for leaf removal on tight clustered varieties

such as Vignoles, Seyval, and Pinot gris. That time will be coming up soon in southern Indiana. Removal of 3 to 5 leaves in the cluster zone can greatly reduce risk of Botrytis bunch rot. Exposure to sun makes the berries less susceptible to Botrytis and allows more rapid drying after rain or dew. Spray penetrate in the cluster zone is also improved. Leaf removal also improves fruit quality in aromatic varieties such as Traminette, and most red varieties, where sunlight exposure improved anthocyanin development. Delaying leaf removal increases the risk of sunburn, as does removal of too many leaves, especially on the west side of the canopy. Most growers remove leaves only on the east side (on north-south rows).



Post bloom leaf removal in the cluster zone on VSP trained vines.

## Codling Moth

(Ricky E Foster, [fosterre@purdue.edu](mailto:fosterre@purdue.edu))

As reported in the last edition of Facts for Fancy Fruit, we achieved biofix in Lafayette on May 9. With a lot of cool weather since then, we have only achieved 170.5 degree days as of May 24. This is a year when monitoring degree days has the potential to greatly improve your levels of control of codling compared to spraying on a calendar based schedule. If, for example, you were spraying on a calendar basis and planning to use Imidan for codling moth control in your first cover spray, you would have put that application on long ago, even though no codling moth eggs were hatching. That would most likely have been a wasted application, since it's unlikely that any insect pests were active that Imidan would control. My point is that timing is improved if you use moth catches and degree days to determine when to spray for codling moth.

## Plum Curculio in Almonds

(Ricky E Foster, [fosterre@purdue.edu](mailto:fosterre@purdue.edu))

I received one of the most unusual samples to identify last week that I've seen during my time at Purdue. The sample contained almond nuts that were severely damaged by plum curculio. First, I didn't know we could grow almonds in Indiana and, second, I



didn't know that plum curculio was a pest of almonds. It made more sense upon learning that almonds, like plums, peaches, cherries, etc., are members of the genus *Prunus*. So, my education continues.

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## Fire Blight

(Janna L Beckerman, [jbeckerm@purdue.edu](mailto:jbeckerm@purdue.edu), (765) 494-4628)

Fire blight seems to have established itself in many orchards throughout the state, meaning it can still be a huge threat in the event of trauma, like hail, due to secondary spread. Secondary spread develops when stormy weather, especially hailstorms, occurs after the primary (blossom) infections. The amount of fire blight that develops after severe weather appears to be directly related to the amount of disease in the orchard, with inoculum levels highest near infected blossoms, cankers, or blighted shoots that were not previously removed. It is difficult to understand the numbers involved in fire blight—but a single droplet of ooze (Fig.1) can contain 10 to 100 BILLION bacteria. That's a lot of possible fire blight, people!

Fire blight infections start primarily at the flowers, although bacteria can enter and establish through wounds caused by hail or high winds associated with summer storms (referred to as shoot blight or trauma blight. Note: Shoot blight is often the result of carryover flower infections from the previous year). The degree the bacteria spread has a lot to do with type of cultivar infected: Red Delicious, Honeycrisp, McIntosh, and Empire are more resistant to fire blight, compared to cultivars like Crispin(Mutsu), Fuji, Gala, Ginger Gold, Gravenstein, Jonathan, Ida Red, and Lodi that are much more susceptible. These susceptible cultivars serve as reservoirs for the bacteria. At our research plot at Meigs, we have witnessed a severe outbreak of fire blight in the Fuji/Gala/Jonathan/Ruby Jon planting—a ground zero of sorts. This block of super susceptible cultivars acted as a source of inoculum for other cultivars, quickly spreading throughout the block, and then radiating out to those trees adjacent to or downwind from the Fuji/Gala/Jonathan/Ruby Jon planting.

Dealing with shoot blight is stressful, because there are no truly effective treatments; adding to the stress and frustration is the fact that new strikes may keep appearing all summer. This leaves the grower with the question: To cut or not to cut? In Michigan, in 2000, during the big fire blight epidemic, some apple growers pruned out fire blight infections and strikes as they appeared. Other growers left the fire blight strikes until winter before pruning. Regardless of when they pruned, both found some fire blight in their orchards the following season. I think this is an important point to make—that there is no silver bullet.

Dave Rosenberger of Cornell has suggested a type of fire blight triage when it comes to making a pruning decision once blight has struck, going from highest to lowest priority. This is a great approach, so I've expanded upon this:

1. Young orchards (less than 8 years old) with few strikes should be pruned out as soon as they appear. Failure to do so increases the likelihood that blight will continue to

spread both to adjacent trees and possibly into the rootstocks of affected trees.

2. Young orchards (3-8 years old) with severe strikes. Take out trees, if necessary.
3. Older orchards with a few strikes. Pruning out infections in mature trees may not be practical, but mature trees with a full crop will set terminal shoot buds earlier than young trees. When trees set terminal buds, blight stops spreading both between trees and within the affected trees. Under dry conditions when only a few strikes occur, pruning to the previous year's growth (the non-infected 2-year-old wood) should limit spread and reduce inoculum. This strategy also works when infections are few or is limited in location (one block or area of the orchard).
4. DNR- Definitely Need to Remove! Okay, a bad triage pun, but this is group you prune at ground level—trees with so many strikes that most of the tree would need to be removed. In this instance, severe pruning can stimulate new growth that can become re-infected, thereby increasing and not removing inoculum!

Trees should be examined two or three times weekly until either the epidemic slows or tree growth slows (which will slow the epidemic).

One final note: Streptomycin or other antibiotic sprays should NOT be applied during summer because summer applications can result in rapid development streptomycin-resistant strains of the blight pathogen.



Fire blight overwinters in canker



Fire blight removal often requires more extensive pruning than most growers realize



Current season fire blight symptoms include blossom blight or trauma blight from recent hail storms

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## Upcoming Events

*(Peter M Hirst, [hirst@purdue.edu](mailto:hirst@purdue.edu), (765) 494-1323)*

### **Blueberry Growers of Indiana Spring Meeting and potluck June 9, 2016, 4:00 pm**

Sider's Blueberry Farm. 6254 W. 200 North, Rochester, IN. More information will follow.

### **Indiana Winery and Vineyard Association Summer meeting July 19-20, 2016**

Brown County Inn. Nashville, IN. More information will follow.

### **Indiana Hort Society Summer Field Day June 22, 2016**

David Doud's Countyline Orchard 7877 W 400 N, Wabash, IN 46992.

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

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

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## Apple Chemical thinning

*(Peter M Hirst, [hirst@purdue.edu](mailto:hirst@purdue.edu), (765) 494-1323)*

Finally we have some warm, sunny weather, and that means fruit are growing quickly. Generally, fruit are 10-20 mm depending on where in the state you're located. Many of our common post bloom thinners such as NAA, Sevin and Maxcell work very well when fruit are around 12mm and temperatures are in the 70s. Once fruit are in the 15-20mm range, the only materials likely to be effective are Sevin and ethephon. While ethephon can be an effective thinner, it can have variable effects (more than other thinners) and is too risky for most growers to consider unless they are really in a tight spot. So when fruit are in this size range (15-20mm) the thinning window is starting to close very fast, and Sevin is probably the best choice for growers.

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## Apple June drop

*(Peter M Hirst, [hirst@purdue.edu](mailto:hirst@purdue.edu), (765) 494-1323)*

We've all heard of apple June drop, but what is it, what are the causes and why should we care? June drop is more correctly called physiological fruit drop and is caused by a shortfall of carbohydrates in the tree. This shortfall is because the trees have limited leaf area for photosynthesis (supply of carbohydrates) but a lot of developing fruit all demanding carbohydrates to grow. So there's a competition for resources and the strong survive while the weaker competitors drop off. The common post-bloom thinners increase this shortfall and therefore increase fruit drop, but they do this in different ways. NAA reduces photosynthesis and therefore decreases the supply of carbohydrates. Maxcell increases respiration so carbohydrates are consumed more quickly and decreases the pool of carbohydrates available for fruit development. Sevin decreases translocation of the carbohydrates from the leaves to the fruit, and so also increases the shortfall of carbohydrates. These different mechanisms of action help explain why the combination of thinning materials can be so effective.

So what are we seeing this year? With a lot of cool, cloudy weather soon after bloom, we would expect increased fruit drop from lower photosynthetic rates. Surprisingly, this is not what we're seeing in many places this year, and this has caught out some growers. Refer to the accompanying article on thinning and which materials can be most effective as fruit continue to grow.

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## Summer Hort. Society meeting

*(Peter M Hirst, [hirst@purdue.edu](mailto:hirst@purdue.edu), (765) 494-1323)*

Summer Hort. Society meeting

Doud's Countyline Orchard  
7877 W 400 N, Wabash, IN 46992

The summer meeting of the Indiana Horticultural Society will be held June 22 mainly at Doud's Countyline Orchard in Wabash, IN.

We will also be briefly visiting a number of nearby farms to look at production of blackberries, peaches, strawberries, blueberries, high tunnel vegetables, intensive leafy greens and an integrated production system.

The meeting will begin with registration at Countyline Orchard on Wabash at 9:30 am on Wednesday June 22 and conclude the afternoon with pizza cooked on farm in a wood-fired pizza oven. Registration will be \$5.00 with a modest cost for lunch and dinner payable at registration (there is no advance registration - on-site only on June 22).

There is an optional dinner and social time for growers the prior evening, June 21 at 6:30 pm at:

Charley Creek Inn Restaurant  
111 W Market St., Wabash, IN 46992

Phone 260-563-0111

<http://www.charleycreekinn.com>

For those wishing to stay over, a number of us will be staying here. Reservations can be made directly with the hotel or one of



the online travel/hotel sites.

A complete schedule will be announced in FFF soon, but for now make sure you have this date on your calendar and plan to attend.

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## Current Growth Stages in Lafayette, IN

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Blackberry-primocane: petal fall



Apple: fruit 12-14 mm



Peach: Fruit approaching 1" diameter



Strawberry: nearing harvest



Blackberry - thornless: bloom



Black raspberry: petal fall



Grape: early bloom



Sweet cherry: Dime-sized fruit

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