PURDUE UNIVERSITY
PURDUE EXTENSION
FACTS FOR Fancy Fruit
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In This Issue

Crop Conditions

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

Honeycrisp- Bloom

Grapes- 3 inch shoots

Peach- Probably about shuck split but no live flowers in Lafayette

Blackberry- Primocanes emerging

Strawberry- Bloom

Cherry- Shuck split

What a difference a couple of weeks of warm weather makes. Crop development is progressing rapidly with warmer weather. Apples in the south are around 10 mm, and in full bloom here in Lafayette. Peaches in southern areas of the state are still in the shuck, but barely. Folks in southern areas are getting ready to apply chemical thinners to apples, and those of us in more northern areas need to be ready to apply thinners soon.

Spring Temperatures

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

We all know that it in the last two weeks, temperatures have warmed up considerably, but when we plot out the growing degree days (GDD), we can see how dramatic this warming trend has been (Figure 1). In Lafayette a couple of weeks ago, we had accumulated less than 100 GDD – now we're closing in on 300. We're still considerably later than last year, but tracking similarly to 2013, 2014 and 2015.

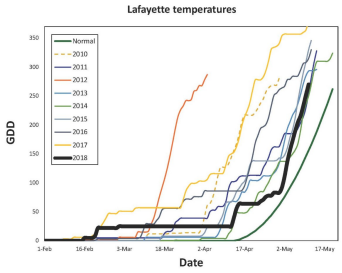

Figure 1- GDD in Lafayette

After Fire Blight Has Struck

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

In case you blinked, we went from green tip to bloom in about three days, and by the time you read this, we will have passed through the blossom blight period. For most of the state, the late spring consisted of cool, dry weather that was not conducive to blight infection in the northern half of the state. The southern half of the state was only slightly more conducive for infection. This means that any strikes seen in the next few weeks probably came from damage from last year. Since last year was unusually wet, with a lot of susceptible rat-tail blooms, it is most likely that any fire blight infections observed as shoot and canker blight can trace their beginnings to rat-tail blooms of last year (Fig. 1).

Figure 1 Rat-tail bloom

What to do now?

Until a terminal bud has formed and growth has ceased, I do not recommend pruning out strikes because pruning is not often successful in eradicating the bacteria from most infected trees. This is supported by work done by Paul Steiner, who stated "Since pruning was not successful in an experimental situation, it is unlikely that pruning would be more successful in commercial situations." In fact, I regularly observe the continued spread of fire blight due to insufficient pruning, reinfection of new, succulent growth that suckered after pruning, or worst yet, spread of the disease by pruning tools. Similar work done by Shtienberg, D. et al., in 2003 ("New considerations for pruning in management of fire blight in pears." Plant Dis. 87:1083-1088) found

the same thing. Simply stated: Pruning did not result in successful eradication of the pathogen (Fig. 2). Period. Sometimes, the best thing to do is to wait. It was found that pruning worked best the later in the season it was performed, and the best results were obtained when pruning was carried out while the trees were dormant. None of these dormant-pruned trees in either study had a severely infected canopy the following spring.

Obviously, postponing the cutting of fire blight–infected tissues to winter may create two problems:

1. the bacteria may continue to progress in the infected tissues and result in greater damage;
2. delayed cutting allows infected tissues to serve as an active source of inoculum that could endanger the entire orchard.

Figure 2 Pruning failed to eliminate fire blight

Rat-tail Bloom Management

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Please remember that it is the blossoms that are most susceptible to the bacteria; assuming that there are no rat-tail or autumn blossoms, and in the absence of a hail event, the probability of secondary infections in orchards is minimal. In the event that rat-tail blossoms are apparent and extensive, it is critical to prevent their infection. If fewer than 3 applications of streptomycin have been made during bloom, it can be used to protect these rat-tail blossoms as long as it is within 50 days to harvest (PHI) for apples and 30 days (PHI) for pears. Better still, if time and labor are available, removing the rattail blossoms by hand may be more sustainable.

What to do next:

“Based upon current information, growers need to distinguish between situations in which the disease is detected on blossom clusters, succulent shoots, or lateral branches, versus first detected on main branches and limbs. In the first situation, growers are advised to make a distinction between spring and autumn infections. In the spring, recommendations are not to touch trees with limited growth vigor. On these trees, fire blight infections are likely to be restricted to the spurs and not to invade the main branches of the trees. Cutting these infections off, if it did not successfully eradicate the bacteria from the trees, could make the situation worse. If trees with vigorous growth (also called way too much fertilizer!!!) are infected, growers need to differentiate between those bearing few and those bearing numerous infections. With limited infections, growers should eradicate the infections by cutting back to a healthy section of the plant, about 20” from the site of visual symptoms. If numerous infections are observed on vigorous trees, the experience from this study suggests that the eradication efforts will likely be unsuccessful and may even make situation worse. Thus, to minimize unsuccessful pruning efforts, growers should postpone the pruning until winter. In these cases, the infections limbs and branches should be marked with colored paint so growers know what to prune in the late winter when the plants are

dormant.

Trees that repeatedly show symptoms of fire blight (more than three years in a row) should probably be removed and burned. Three cans of spray paint can help: Green for year 1; yellow for year two, and red for year three. Or forget the red spray paint and grab a chainsaw. I say this for three reasons: First, continuous pruning of the same infected trees year after year is not sustainable; Second, the repeating infection indicates that the tree is systemically infected, and third, this tree now serves as a reservoir for additional infections all throughout the orchard. In this scenario, you are best advised to literally "cut your losses" and prune at ground level.

Finally, unless you are still at bloom (or extensive rat-tail bloom), streptomycin use is not recommended, despite what the label says ("After petal fall, continue applications at 10- to 14-day intervals to control twig blight (this could mean an additional 6 – 8 applications after blossom sprays"). There is simply no evidence to show that this is effective, and a lot of evidence (MI) to show that it drives antibiotic resistance. Its efficacy (along with the plant growth regulator, Apogee), followed up by one or two applications through petal fall. No antibiotic is recommended for trauma blight. In Indiana, where there are no reports of streptomycin resistant fire blight bacteria, there is no need to use any other antibiotic. And if we want to keep it that way, we need to be mindful of how and when we use this product.

Gray Mold Management in Strawberries

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

Gray mold, caused by *Botrytis cinerea*, is the most common disease of strawberries. Managing this disease can be challenging if rainfall occurs during flowering. This year has been relatively dry, so hopefully there will be less disease pressure. Nevertheless, growers should consider fungicide applications to prevent gray mold infections. Timing of applications is critical. Botrytis is an opportunist. It infects during bloom, invading dying flower parts as bloom subsides. The fungus remains latent in the dead flower parts until the fruit begins to ripen, then grows rapidly and causes fruit rot. Fungicides should be applied at 10% bloom, then again at full bloom. Applications as fruit are ripening and rot starts to show up are ineffective.

There are several fungicides effective against Botrytis. General protectants such as Captan are reasonably effective. However, there are some fungicides specific for this pathogen. Elevate, Rovral, Scala, and Switch are specific "botryosides", that are effective only on Botrytis. Several newer products are effective against Botrytis and other pathogens. Flint Extra, Fontelis, Kenja, Luna Privilege, etc. The 2018 Midwest Fruit Pest Management Guide lists several new options for disease management. It can be found on line at: https://ag.purdue.edu/hla/Hort/Pages/sfg_sprayguide.aspx

Strawberry Gray Mold

Apple Chemical Thinning

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

We're getting close to the time when growers need to make chemical thinning decisions – for many the most perplexing and risky decision they will make all year. Even with a relatively mild spring without too much interference by spring frosts, this is a tricky call to make. In most cases, there are plenty of flowers for a full crop. Remember that only about 5-10% fruit set is usually enough for a full crop.

As apple crops approach petal fall, it's time to start chemical thinning. Generally speaking, flowering has been heavy and pollinating weather favorable, therefore we expect fruit set to be fairly heavy. This is especially true in more northern areas of the state. In southern areas, bloom occurred during a time of lower temperatures so fruit set may not be as high. Growers should take into account the temperatures during bloom time and level of bee activity to help predict the degree of fruit set. With higher fruit set, growers should consider being more aggressive in their approach to chemical thinning this year.

The effectiveness of a chemical thinner application depends on many factors, and to hit it just right takes as much art as science. That's a fancy way of saying that we don't really understand why different orchards respond differently to a given thinner application. But we know they do. That's why it's impossible to develop a recipe approach to thinning. So, let me explain a little about how thinners work, then discuss some specific strategies.

From the time of bloom and for the next month or so, there are thousands of flowers and developing fruitlets on the tree, struggling to get enough resources to grow. On a semi-dwarf tree, there can easily be 5000 flowers (yes, we've counted!). By resources I mean food in the form of carbohydrates. These carbohydrates come from stored sources in the tree but especially from leaves absorbing light energy and converting it to carbohydrates through the photosynthetic process. At this time of year, leaf area for photosynthesis is limited, so there is a shortage in the supply of carbohydrates. Because the demand exceeds the supply, fruitlets compete for carbohydrates and the strong survive. The weak flowers or fruitlets lose out and drop off, which we call fruit drop or June drop. The thinners we commonly use in Indiana exacerbate this shortage, so that even more fruitlets drop off. Some, like NAA, reduce photosynthesis so there is less carbohydrate supply. Others (such as Sevin) decrease the flow of carbohydrates from leaves to fruitlets, thereby also decreasing the supply. The Maxcell-type thinners increase respiration, burning up more carbohydrates so less is left over for developing fruitlets. So in these 3 different ways, thinners increase the shortfall of carbohydrates resulting in increased fruit drop. Keeping this in mind allows growers to predict the response to thinners from year to year. For example, a lot of cloudy weather soon after bloom means less light for photosynthesis, less carbohydrate and increased fruit drop. In that situation growers may want to back off a little with their thinner rates. Thinners work best when the weather is warmer. The optimal temperature is around 70˚F and below 60 you may as well not bother – most thinners are not going to have much effect when it's that cool. When the temperature is 80˚F or above, be careful – thinners can have very strong effects at those temperatures.

It turns out that some of our most biennial varieties (Fuji, Golden Delicious) are also some of the more difficult to thin. So not only is thinning more difficult, the consequences of inadequate thinning are greater. Keep in mind your own experience on your orchard, but with Fuji you

might want to start with a full rate of Maxcell soon after petal fall. Wait a full 2 weeks to see the response to the thinner application before applying more thinners. If another application is needed, I'd suggest **ONE** of the following, depending on how aggressive you want to be. In order from conservative to most aggressive, I'd suggest:

Maxcell again

Sevin

Maxcell + sevin

Maxcell + ethrel

Maxcell + oil

Keep in mind these are general thoughts based on my experience and published research, but as you know things work a little differently on different farms, so combine these thoughts with your own experience to come up with a plan. Most products do not thin Fuji enough. I'd put NAA/NAD, carbaryl and ethephon in this category. I'd stay away from NAA and NAD because of the tendency to form pygmies. Starting at petal fall gives you some time for a follow up application 2 weeks later if necessary and spreads the risk. This is often referred to as "The Nibble Approach". The single application approach is putting all your eggs in one basket and too risky for many growers.

Use FoodLink to Increase Awareness and Sales of Fresh Produce

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

Would you buy something if you didn't understand how it worked or what to do with it? Likely not…

Imagine a customer of yours who doesn't know how to select, prepare or store the fresh healthful produce that you are growing and offering for sale.

How likely is it that they will buy that product? Or buy it twice?

What are we doing at the point of sale to encourage that purchase?

Your produce may be cosmetically perfect and 100% healthful but is it able to communicate to the customer anything about its selection, use or how much their family will enjoy it if prepared properly?

Most every packaged , ready to eat, value added product in the grocery store is designed to convey these messages in a loud and clear format…Have you seen the breakfast cereal aisle in the grocery store lately? Those products are conveying an undeniable "BUY ME" message and they are directly competing for customer dollars with your silent but beautiful (and healthful) produce every day.

There is no single answer about how to step up to the competition… it is a variety of tools and techniques all implemented on a daily basis throughout the year… not the least of which is the trust that your customer has in you and your ongoing efforts to motivate and educate them about good food! No one does it better than you!

One tool we have, now in its third year of use, to help supplement your efforts to educate your shopper/ buyer (wholesale or retail) is **Purdue Extension FoodLink**…

When used at the point of sale or in your marketing materials (for free) FoodLink can answer all of the questions below (and hundreds more) that you customers ask you on a daily basis…

- *How do I prepare asparagus?*
- *Do you have a recipe for apple crisp?*
- *How can I prepare one ear of sweet corn?*
- *How do I take the crystals out of my honey?*
- *What in the world do I do with Kohlrabi?*

FoodLink is a **FREE** tool that should help answer some of your customer questions!

Just cut and paste the QR codes into your marketing and promotional materials, or simply post the appropriate QR code card alongside of the product. Where ever the code is… the consumer can access basic information (including recipes) directly from their cell phone. The code can be attached to the fruit itself…placed in your local advertising in the newspaper or blown up to billboard size…Some have even used QR codes as the design of a corn maze!!! Perhaps you want to be the first to incorporate food education into a Hoosier Corn Maze!!! Children would love to navigate via their smartphones… and they might learn something along the way! We can help!

If you are already using FoodLink in the farmers' market, a roadside stand, on your packaging materials or in the on farm market… then THANK YOU!…I would love to hear of your experiences and see pictures!

If not… and once again as the market season begins to build steam you find yourself answering a never ending array of customer questions about how to select, use, prepare, serve, and preserve our many Indiana grown specialty crops… fruits…vegetables…herbs and honey then my hope is that FoodLink will serve to save you time in this regard and hopefully increase consumer knowledge about the great crops that you are growing and selling…If they know more about them… my hope is that they will buy more!!!

Quick facts…

- FoodLink QR codes and informational PDFs (including recipes) are **FREE** and printable on demand
- Foodlink marketing resources… point of sale cards, banners, signage etc…are **FREE…**
- FoodLink provides quality information and

recipes about 64 Indiana crops and honey…and the list is growing…
- Foodlink's use is limited only by your imagination to help market your crops.
- FoodLink will provide not only recipes for each crop but will link users directly to Pinterest for many additional popular uses.
- FoodLink is growing, changing and evolving and we welcome your suggestions… large or small about how to make it a better tool for you.

Remember… You <u>do not</u> need to understand how to use a QR code but MANY of your shoppers (and their children) will…That is the important thing!

Here is the link you need to take you to FoodLink www.purdue.edu/Foodlink

.. once you are there… click enroll at the top header bar and take five minutes to enroll…we will send you a starter kit of relevant marketing materials… at ***NO COST***…

New in 2018 we have a dozen quick and easy recipes (3 for each season) both on video and as a full color booklet…That's right… those are FREE also…we will let FoodLink enrollees know how to order these.

Additionally… FoodLink enrollees will have their market identified on the online map to help folks find you….that's right… ***NO COST!***

See who else is using FoodLink at ***https://extension.purdue.edu/foodlink/about.php***

Please let me know if you need help enrolling or using FoodLink… I welcome your ideas and input…

My goals are simple… enhance the quantity of specialty crops consumed and enjoyed by Hoosier families and in turn increase your SALES of fresh Hoosier produce…

Please let me know how I can help. FoodLink information and resources are at your disposal…

All the best,

Roy Ballard
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Summer Field Tour

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We are delighted to be hosted for our Summer Tour by Garwood Orchards – one of the larger and best run operations in the state. This applies to their fruit, vegetable and farm marketing activities.

Whether you are a fruit grower, a vegetable grower or a farm marketer, you are bound to be inspired and to see some ideas worth stealing!

Write the date on your calendar now, and plan to attend:

June 26, 2018
Garwood Orchards
5911 W 50 South
LaPorte, IN 46350

Keep watching Facts for Fancy fruit for complete details – coming soon.

Upcoming Events

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

June 26, 2018 Indiana Hort Society Summer Field Day
Garwood Orchard, LaPorte, IN
Contact Lori Jolly-Brown ljollybr@ purdue.edu

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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