PURDUE UNIVERSITY
PURDUE EXTENSION
FACTS FOR Fancy Fruit
Issue: 20-06
June 8, 2020

In This Issue

Crop Conditions

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

Grapes are in early bloom in the Lafayette area. Apples are mostly in the half inch stage, where there is any fruit. June drop has not yet occurred. Frost scarring on fruits is obvious. Black raspberries are at petal fall and they generally look very good. Floricane blackberries are in bloom where there are healthy canes. Several blooms have black centers indicating freeze damage. In our plantings and several others in the area cane blight symptoms are prevalent and most floricanes are dead or dying. Primocanes are healthy and nearing the time when tipping will be needed (in free standing plantings). Primocane fruiting blackberries have about 18-24 inch canes. Strawberry fruit are ripe and harvest is underway. Honey berries are also ripe. Gooseberries and currants will begin ripening in the next week or so.

Grape in early bloom

Apple fruitlets prior to June drop

Frost scarring on fruit.

Frost scarring on fruit

Black raspberry fruits

Blackberry in full bloom

Blackberry with dead recepticle.

Blackberries after dead floricanes removed

Blackberry primocane tipped to encourage lateral branching

Pawpaw fruit cluster

Honey berry near harvest

Gooseberry fruits near harvest

Climate and weather

(Beth Hall, hall556@purdue.edu)

June Outlook Calling for Above-Normal Temperatures
Beth Hall
Indiana State Climate Office

The month of May was sprinkled with a record-breaking freeze over Mother's Day weekend, followed by heavy rainfall the following weekend, with a roller coaster of cool periods and extremely warm periods. We often think of spring as being that transition between winter and summer with lots of ups and downs, but those extremes from one week to the next made it difficult to know what to expect more than a few days out. By the time the month ended, precipitation was slightly below normal in the southwestern and west-central parts of Indiana with the rest of the state slightly above normal. May's temperatures averaged only 1°F to 2°F below normal. This is a great example of how averaging data can mask the extremes that made up reality!

What will June be like? The latest national Climate Prediction Center outlooks for June are showing increased confidence for above normal temperatures and too much uncertainty for whether precipitation will be above or below normal (Figure 1). Over the next few weeks, temperatures are forecasted to be in the upper 80s to lower 90s with some intermittent rainfall due to convection. After that warm period passes, temperatures are predicted to return to more seasonal levels by mid-June.

Modified growing degree day (MGDD) accumulations (since April 1) are still lagging behind previous years with the exception of Lafayette, IN area. The greatest lags are in the southern half of the state (Figure 2). Compared to what is climatologically normal, MGDDs are 120 – 60 units behind (Figure 3).

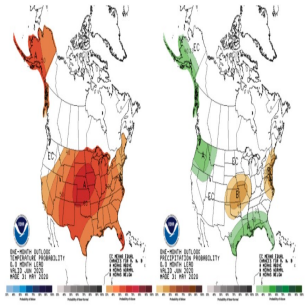

Figure 1. Climate outlooks for temperature (left) and precipitation where the darker the shading indicates the greater the confidence that conditions will be above or below normal.

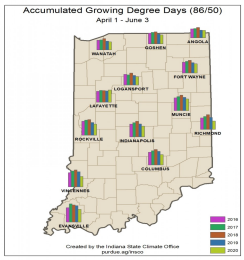

Figure 2. Comparison of accumulated modified growing degree days since April 1 over the past several years.

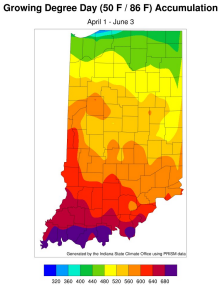

Figure 3. Accumulated modified growing degree days since April 1, 2020.

Important grape sprays

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

Frost injury this spring has created a situation where grapes have a few primary shoots, some secondary shoots, and many non-count basal and latent shoots. This puts shoots at various stages of development and creates problems for growers. Regardless, some varieties are are at or nearing bloom on surviving primary shoots, which is a key time to control important diseases such as black rot, downy mildew, and powdery mildew. The three or four sprays made from immediate pre-bloom to 4 weeks post bloom are critical for controlling fruit infections. Since bloom will likely be prolonged this year, growers may need to make a couple of additional sprays during this time.

Growers should pay extra attention to coverage, especially in the fruit zone, and use the best fungicides available. The Midwest Fruit Pest Management Guide lists recommended products. A protectant (FRAC M) such as Mancozeb, Captan or Ziram, plus one of the demethylation inhibitors (FRAC 3) such as Mettle, Procure, Rally or Tebuzol is the recommended fungicide treatment.

Rotating with a different mode of action, such the strobilurins (FRAC 11) Abound, Sovran, or Flint is a good option as well. The combination products such as Pristine, Inspire Super, Revus Top, Quadris Top, and Luna Experience are also effective for broad-spectrum disease control. Be sure to read the warnings about phytotoxicity with fungicides containing difenoconazole. These next few sprays are critical to producing sound, clean fruit. Pay close attention to your sprayer output to be sure you're getting thorough coverage. This is the most important time of the year for fruit disease control. Once we get 4 to 5 weeks past fruit set, potential for infection of fruit drops significantly.

Grape in early bloom

Grape at 50% bloom

Making lemonade in the vineyard

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

There's a saying that when life gives you lemons you make lemonade. Well, this year life has given us multiple spring frosts, so we have to make the best of the situation. Growers that have

blocks with significant spring frost injury and very little crop may want to use this year to retrain vines, re-establish cordons, and potentially remove blocks to plan for the future. There are many ways this can be done.

In blocks with trunks older than 10 years, or those otherwise compromised by cold damage and trunk disease, cutting vines down completely and retraining new trunks from the ground is a good option. Save several new shoots and select the best next spring to save as new trunks. That decision needs to be made relatively soon so there is adequate time for new shoots to develop.

In blocks with generally healthy trunks, but severe damage to primary shoots, minimizing shoot suckering and thinning this year with the goal of replacing cordons, or improving spur health and position on the cordons is a good option. By saving shoots that originate from the main trunk near the top wire, the entire old cordon can be removed next spring and replaced with healthy canes. On healthy cordons with damage to one-year-old spurs, the only shoots that develop are from basal buds on those spurs or latent buds on the older wood of the cordon. Saving the new shoots along the cordon will allow the older wood spurs to be completely removed next spring. Some shoot thinning and shoot positioning will still need to be done this year, but if you have an eye to the future, you can use this bad situation to make things much better for the health of the vineyard. Cleaning up cordons in this way helps maintain the training system and removes a lot of old dead wood that is an overwintering site for pathogens such as phomopsis and trunk disease organisms.

And when you're all done with the vineyard work, you can pour a little Indiana made whiskey in your lemonade, add a sprig of fresh Indiana-grown mint, and celebrate the Hoosier state and all it has to offer.

Retraining entire block at one time

Piecemeal approach to retraining vines

New shoots from spur basal buds

New shoots from cordon

Abiotic Factors may Cause Deformed Strawberry Fruit

(Wenjing Guan, guan40@purdue.edu)

This article discusses the abiotic factors that may cause deformed strawberry fruit.

Unevenly developed strawberry fruit (Figure 1):

Frost damage is probably the most common abiotic factor causing misshapen strawberry fruit. Temperatures lower than 30°F kill the pistil (female part) of strawberry flowers. Depending on the extent of the injury and the stage of fruit development. The entire pistillate portion of the flower may be killed, which will result in the loss of fruit. If a few pistils are killed, fruit expansion stops where pistils were killed. The damaged fruit then develops unevenly, resulting in misshapen fruit.

Lack of wind for pollination is less likely a problem for field strawberry production but can be a concern for high tunnel production. Because high tunnels are typically closed at the peak strawberry blooming stage in order to maintain heat, air movement is very limited inside of the high tunnel. This can cause poor pollination. This problem can be solved by partially opening high tunnel sides a few hours during the day, or manually disturbing the foliage daily during the blooming stage. Bloom typically happens in March in southern Indiana.

Figure 1. Unevenly developed strawberry fruit.

Fasciated fruit (Figure 2):

Fasciated fruit have fully developed receptacles and seeds, which means this kind of malformation is not related to poor pollination or frost damage. Fasciation is generally considered a varietal characteristic, It was suspected that fasciated fruit maybe accentuated by environmental conditions in fall, such as too short of day length that influences flower bud development. Fasciated fruit may not necessarily mean they are defective. Actually, they may be attractive in the local market because of the large size and unique shape.

Figure 2. Fasciated strawberry fruit

Hollow heart and split fruit (Figure 3)

This deformation in strawberry fruit is also a varietal characteristic and less likely to be caused by poor pollination and frost damage. In a cultivar trial involving ten recently released cultivars, we noticed it happens most frequently on cultivar Fronteras. The fruit splits, has two tips and a hollow center. Similar to fasciated fruit, hollow heart fruit does not affect the quality and may be attractive in the local market. But in the USDA standard, it may be rated as a defective. Other than genetically related, we are not sure why this happens. Some suspect that it might be caused by the fruits rapid growth due to excessive fertility.

Figure 3. Hollow heart and split strawberry fruit.

Considerations for Weed-Free Strip Width

(Stephen Meyers, slmeyers@purdue.edu)

In perennial fruit crops, the orchard or vineyard floor is often divided into two distinct zones. Within the planted row portion of the field, weeds are managed- typically with herbicides. The between-row spaces or “row middles” consist of planted grass or native vegetation and facilitate the travel of equipment. Determining where the two zones meet is intriguing to a weed scientist.

Weeds are most commonly defined as “plants out of place”. The orchard floor is the perfect example of this definition. When the same non-crop plant allowed to exist in the row middles encroaches into the weed-free strip, that plant becomes a weed (Figure 1). As a rule of thumb, weeds closer to the crop compete more for light, water, and nutrient resources than those same weeds farther away. But how close is too close?

An Example:

In the interest of time, I’ll focus on results of research into how weed-free strip width influences thornless, floricane-bearing blackberries.

The generally accepted weed-free strip width for blackberry is 4 ft with 2 ft on either side of the row.

But the influence of weed-free strip width may differ between newly planted and established blackberries.

Results in newly planted blackberry:

During my time as a graduate student at North Carolina State University, I evaluated the influence of weed-free strip width on newly planted ‘Navaho’ blackberry.

Plants were started from 50 plug cell trays, and we established and maintained weed-free strips of 0, 1, 2, 4, 6, and 8 ft.

We found no influence of weed-free strip width on primocane or floricane number or size.

Of course, yields in the year following establishment were low, but there was a trend. Blackberry fruit yield increased as weed-free strip width increased from 0 ft to 3 ft (Figure 2). However, there was no benefit to increasing the strip greater than 3 ft.

Blackberry fruit weight increased as weed-free strip width increased from 0 to 8 ft (Figure 3).

With the exception of soluble solids content, which was greatest with a 0 ft strip, we observed no effects on blackberry fruit quality.

Results in established blackberry:

A colleague of mine, Nick Basinger, conducted a similar study with established, 5 year-old ‘Navaho’ blackberries, and reported that cane number, blackberry fruit per plant, and total blackberry fruit yield increased from 2 to 6 ft. His findings suggest that increasing the weed-free strip width from 4 ft to 6 ft could result in more fruit and greater overall yields.

He also found a trend of increased fruit weight with increasing weed-free strip width, but very little influence on fruit quality.

Is it possible to have a vegetation-free strip that is too wide?

The short answer is “yes”. Excessively large vegetation-free strips in perennial fruits have been documented to result in increased vegetative growth, which may require additional labor in pruning or cane thinning. Under some conditions, increasing weed-free strip width can also result in a decrease in fruit soluble solids content. For fruit marketed for fresh consumption, the difference is minimal. For wine grapes, a reduction in soluble solids may be more impactful to quality.

There are all kinds of other factors that influence vegetation-free strip width decisions. Below are some of the common ones I have encounter when speaking with producers:

Risk of erosion. Orchard sites on steep slopes may utilize smaller weed-free strips to reduce the risk of erosion from increased exposed soil.

Equipment size. Row middle width can be increased or decreased to accommodate equipment. The most frequent example I've been given regarding weed-free strip width and equipment relates to mower width. For example, if an operation owns a 6 ft mower, the row middle width will often be 6 ft wide or less to avoid the need to make two passes.

Irrigation and soil type. The impact of weed competition can be, in part, negated through increased irrigation. Researchers investigating the impact of weed-free strip width on peach found that the strip width could be decreased if irrigation was increased. On sites with coarse textured soils prone to leaching, it may also be necessary to increase fertilizer applications to replenish nutrients lost to increased irrigation.

Hand-harvesting crews. Many fruit crops are harvested in the early morning when field heat is lower and dew is abundant in row middle vegetation. Larger weed-free strips allow picking crews to keep their feet dry as they pick.

Figure 1. 'Navaho' blackberries grown as part of a weed-free strip width research trial in Jackson Springs, North Carolina.

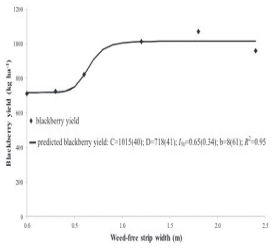

Figure 2. Yield of 'Navaho' blackberries in first bearing year in Jackson Springs, North Carolina (Note: 1 kg/ha = 0.89 lb/acre; 1 m = 3.3 ft).

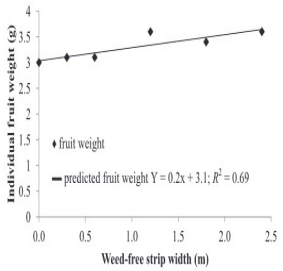

Figure 3. Fruit size of 'Navaho' blackberries increased as weed-free strip width increased. (Note: 1 m = 3.3 ft).

Let's Talk (Online) Turkey – Hoosier Young Farmer Coalition announces webinar series

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

Small farmers are moving loads of product via online sales. Let's talk about how, what's working, and what you need to sell online amid a pandemic.

Hoosier Young Farmers Coalition is hosting farmer-to-farmer webinars. Each one will feature a different farmer sharing the tools that are being used to sell online.

About these Events

You're probably already adapting to online sales amid this pandemic. But if you'd like to talk about how it's going, see what tools other farmers are using, discuss best practices (on the front end, back end, or in between), and share ideas, then we've got a space for you. Join the Hoosier Young Farmers Coalition each week, now – mid June. Each time, a different farmer from Indiana will talk about their experiences moving to online sales and what they've learned.

Sessions will be Wednesdays at Noon Eastern and Thursdays at 7:00 PM Eastern starting May 27. We'll meet via Zoom (or you can call in) and of course it's free. The link to each meeting will be sent out one hour prior to the start of the meeting (we'll send it to

the email you use to register).

Click here to sign up (it's free!) for sessions with these fantastic farmers (two more to be announced!):

- Wednesday, June 3rd at Noon Eastern. Chat with Zach Hawkins, J.L. Hawkins Famly Farm about how they are using Square for their store and Harvie for CSA Management.
- Thursday, June 4th at 7:00 PM Eastern. Chat with Roger and Mary Winstead, Beautiful Edibles Grow about using FarmersWeb and Market Wagon – Evansville.
- Wednesday, June 10th at Noon Eastern. TBD.
- Thursday, June 11th at 7:00 PM Eastern. Chat with Mike Record, New Ground Farm about Square and Local Food Marketplace (Bloomington city market).
- Wednesday, June 17th at Noon Eastern. Chat with Joseph Fischer, Fischer Farms Natural Foods, LLC about using Grazecart.
- Thursday, June 18th at 7:00 PM Eastern. TBD.

For more information, contact Hoosier Young Farmer Coalition at info@hoosieryfc.org.

For further resources visit: https://www.purdue.edu/dffs/

Guide for U-pick producers / agritourism sites during the COVID-19 pandemic

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

Spring's arrival brings many wonderful experiences – including the opportunity for local consumers to pick farm-fresh produce onsite, learn more about local outlets through agritourism and enjoy time outdoors.

The U-Pick season, as it's known, is just around the corner for strawberries, blueberries, cherries and more. Now is the time to implement best practices to maintain physical distancing, minimize community spread of COVID-19 and safely sell products. These guidelines (https://extension.purdue.edu/article/37222) developed by Purdue Extension go hand in hand with Indian Governor Eric J. Holcomb's executive order, as well as Purdue Extension COVID-19 resource articles for direct marketing, farmers' markets, and more. U-Pick and agritourism activities are deemed essential due to their agricultural connection. Also, the North American Farmers' Direct Marketing Association has summarized practices implemented by southern U.S. states – where U-Pick season has already started.

For further resources visit: https://www.purdue.edu/dffs/

Value-Added Production among Indiana Produce Growers

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

Are you a produce grower?

Have you thought about produce your own value-added products that increase the value of your fresh produce? What are the challenges for you to start or expand your value-added business? How does COVID-19 affect your business?

We would like to invite you to participate in the online survey to share your perspective and experiences on value-added production and we also want to learn about how COVID-19 pandemic affect your business. Your feedback will be very valuable for us to develop better learning materials for you and other growers.

You can participate in this study if you are a Produce Grower. You do not need to have a value-added business! This survey is different from the one distributed last year.

Please help us by completing this survey: https://purdue.ca1.qualtrics.com/jfe/form/SV_6RmMdQjLEFAr445You will have the chance to receive a $35 Amazon e-gift card (odds: 1in 10) if you enter your email address in the last survey question. The winner will be notified via e-mail.

If you have any questions, please feel free to contact Han Chen at chen2401@purdue.edu or 317-970-6827.

For further resources visit: https://www.purdue.edu/dffs/

Apple crop

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

Apple crops are looking dismal around the state. Here in Lafayette we probably have about 20% of a crop, and I'm hearing similar things around the state. With a short crop, growers need to decide whether it's worth protecting the fruit that are present with a full pesticide program, or writing the crop off and reducing their pesticide coverage and expenses. This is a very tricky decision. Think about how many times that growers say at this time of the year that the crop is a complete loss, then come harvest time they wonder where all those apples came from. So don't be too quick to write off the crop this year. Remember that if 95% of the flowers on a tree don't set fruit or are frosted, then you're still looking at a full crop.

There is some advice on other articles in this issue of FFF on how to reduce pesticide costs when the crop is lost.

apple at 12mm

Hort Society Summer Meeting

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

The summer meeting is going ahead on June 30, but we're changing the format from in-person to a virtual meeting. Again this year we will have a combined meeting with the vegetable growers and farm marketers. We will be hosted by Beasley's Orchard, Danville IN. Beasley's management consists of a vibrant young team comprising Calvin Beasley on the horticulture side and Jim Finley on the marketing side. They are trying many new approaches so I think it will be interesting for growers to see.

An online field day? How is that going to work? Well that is a very good question. Here's the approach. We'll record some videos with the Beasley's team and make these available to growers ahead of time. These will consist of interviews and a tour of the farm. Then on the day of the field day, June 30, we'll have a video conference, using something like Zoom, where growers can hear more from the Beasley's and various Purdue specialists. There will also be an opportunity for growers to interact with each other. For those without computers with sufficiently fast internet speeds, a phone call-in to the meeting will also be possible.

Obviously this COVID-19 world is a very different world from last year, but given the limitations, we'll do the best we can to provide a forum and learning opportunity for growers.

Extension Events

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

Due to the COVID crisis, all Purdue Extension meetings have been cancelled through June. After July 1, in-person meetings may be held and will follow state and local guidelines. Most Purdue Extension staff are working from home and we are available to answer your questions by email, phone or through social media. Our contact information is at the end of the newsletter.

June 4, 2020 Blueberry Growers of Indiana meeting (virtual) hosted by Drs. Laura Ingwell and Elizabeth Long, Purdue Department of Entomology. 4:00 pm EDT. Watch for details in the next issue of the newsletter.

June 30, 2020 Indiana Hort Society summer field day (Virtual, hosted by Beasley's Orchard) More details to come.

July 30, 2020 Small Farm Education Field Day
Daniel Turf Center, Purdue Student Farm
Contact Lori Jolly-Brown, ljollybr@purdue.edu

September 10-12, 2020 Purdue Extension Master Gardener State Conference
Sponsored by the Hamilton and Howard County Master Gardener Associations
Hamilton County Fairgrounds, Noblesville, IN (September 10 and 11)
Tours of Howard County gardens, Kokomo, IN (September 12)
https://hcmga.org/2020sc
(Registration open to Purdue Extension Master Gardener volunteers and Extension staff only)

September 10, 2020 Hydroponics Workshop
Deans Auditorium/HLA Greenhouse
Contact Lori Jolly-Brown, ljollybr@purdue.edu

October 16, 2020 Indiana Flowers Growers Association Conference
Daniel Turf Center
Contact Lori Jolly-Brown, ljollybr@purdue.edu

January 19-21, 2021 Indiana Green Expo
Indiana Convention Center, Indianapolis, IN
Contact Brooke Ponder, bponder@purdue.edu

January 20 & 21, 2021 Indiana Horticultural Conference & Expo
Indianapolis Marriott East
Contact Lori Jolly-Brown, ljollybr@purdue.edu

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