

FANCY FRUIT

Issue: 22-08

July 8, 2022

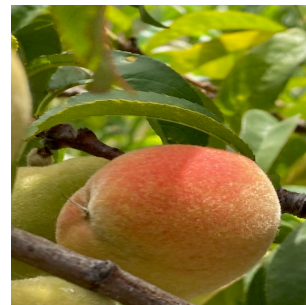
A Newsletter for Commercial and Advanced Amateur fruit growers.

In This Issue

- Crop Conditions
- Scattered showers bring uncertainty
- Powdery Mildew
- Fruit insect monitoring updatesel
- Tissue Analysis for Grapes & Small Fruit
- Strawberry Chat July—Weed Control and Insect Pest Management
- Fancy facts on strawberry pollination
- Purdue Fruit, Veg & Hemp Field Day
- Small Farm Education Field Day
- Pinney Purdue Vegetable Field Day



Apple – fruit about 1" diameter



Peach – starting to ripen

Crop Conditions

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

Blackberry – harvest started



Grapes – harvest approaching

Scattered showers bring uncertainty

(Beth Hall, hall556@purdue.edu)

The latest release of the U.S. Drought Monitor has expanded and intensified drought status across Indiana (Figure 1). This map reflects conditions through early this past Tuesday (July 5th) morning, as heavy rainfall was tracking across the northeastern counties. Probabilities of rainfall continue across the state over the next several days, but the challenge is always when and how much. This time of year, scattered showers and thunderstorms are common due to the increased temperatures causing air to rise,

cool, and condense into clouds.

In weather forecasts, rarely is there a full prediction that rain will or will not fall. The forecast is often expressed as a probability of precipitation (PoP, pronounced “pop”). But what does this really mean? If the PoP is 30%, that means that there is a 30% chance that rain will fall somewhere within the forecasted area. Each part of that is critical to understand. First, a 30% chance of rain also means a 70% chance of no rain. Are you a glass-half-full or glass-half-empty type of person? “That rain might fall somewhere ...” means that rain does not have to fall where you are at, but somewhere in the area that forecast pertains to. Finally, “within the forecasted area” is important to think about to understand if the forecasted area is a city, town, zip code, or some other spatial region. The message here is that precipitation forecasts are essentially always going to be right if the PoPs are anything except 100% or 0%. Even if the PoPs are 100% or 0%, one can feel quite confident that precipitation will definitely (100%) or definitely not (0%) occur somewhere in the area. The more important takeaway is to realize precipitation forecasts are all about risk assessment, and only you know how much risk you are willing to take regarding that forecast. It is also important to realize that forecasts are based upon computer models that find patterns in the atmosphere and apply laws of physics. For these models to improve, more observational data is needed for the computer algorithms to consider. If you are interested in contributing to that improvement effort, please consider becoming a volunteer precipitation observer through the Community Collaborative Rain, Hail, and Snow (CoCoRaHS; cocoahs.org) program.

The climate outlooks over the next several weeks are favoring cooler-than-normal temperatures across Indiana with below-normal precipitation

amounts. This is not the best news for drought impact planning, but the cooler temperatures will help lower evapotranspiration rates and make outdoor activities less oppressive. The recent extreme heat periods have continued to push accumulated modified growing degree day totals ahead of the climatological average for most of the state, with the greatest departures in central and south-central Indiana (Figure 3 and 4).

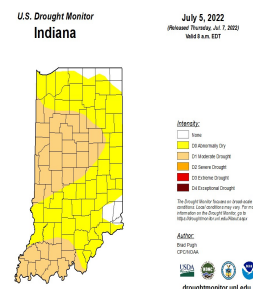


Figure 1. U.S. Drought Monitor for Indiana as of June 28, 2022.

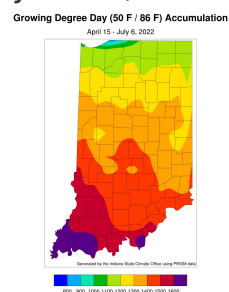


Figure 2. Modified growing degree day (50°F / 86°F) accumulation from April 15-July 6, 2022.

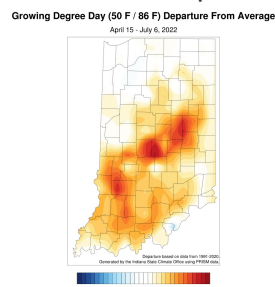


Figure 3. Modified growing degree day (50°F / 86°F) accumulation from April 15-July 6, 2022, represented as the departure from the 1991-2020 climatological average.

Powdery Mildew

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

Crop loss in 2020 and 2021 led many growers to greatly reducing their fungicide applications, or use just captan or mancozeb, which, although effective against scab, are not effective against powdery mildew. Coupled with our unusually dry weather, this has led to a build-up of powdery mildew (PM) inoculum, and continued management issues surrounding this problem.

Powdery mildew symptoms can range from the subtle (Figure 1) to the incredibly obvious (Figure 2), and everything in between. In Indiana, as in many places, the following cultivars are susceptible: Ginger Gold, Jonathan, Ida Red, Cortland, Baldwin, Granny Smith, and Mutsu (Figure 3). We are starting to see symptoms of PM on Honeycrisp at the farm. Although no one cares about the foliage, PM also infects fruit, and can cause a russetting of the skin that some consumers find objectionable (Figure 4).

Although too late for this year, sprays to control mildew should begin at tight cluster through about fourth cover. One of the most effective fungicides against PM is Rally, if resistance is not an issue but other FRAC 3s to consider for excellent control include Cevya, Topguard, and Indar. The strobilurins (Sovran, Flint) or the 7-11s (Merivon, Pristine, Luna Sensation) are also excellent mildewcides. Many straight SDHIs (Aprovia, Excalia, Fontelis, Miravis and Sercadis) provide fair to very good control of PM—just don't rotate with a 7-11 fungicide. Finally, sulfur is an old standby—just be careful to not mix with oil, to not apply during hot weather, and scout to make sure you aren't driving mite flare-ups!

Remember that PM spores can spread and infect new leaves without ANY rain. PM management depends on getting excellent coverage of the entire crop canopy (which means fine droplets—no big honking droplets that splatter and run off the leaf). Using a spreader-sticker will

help, but making sure the volume and droplet size provides sufficient coverage by using and checking spray cards is the best way to keep tabs on your application. Keep in mind that wetter locales will want to keep those cover sprays on every 10-14 days.

Cold weather in winter (below -11 degrees F) will kill mildew-infected buds, reducing overwintering inoculum, and may be the only reason to hope for a cold winter!



Figure 1. Leaf curl is an early symptom of PM in Honeycrisp.



Figure 2. Later signs of apple powdery mildew include a characteristic white cast to leaves.



Figure 3. Cultivar differences can be obvious.



Figure 4. Fruit russet is a symptom of PM.

Fruit insect monitoring updates

(Elizabeth Yim Long, long132@purdue.edu)

I hope the growing season is going well for all fruit producers! My team and several grower collaborators (thank you!) have been monitoring fruit insect pests this season in apple and blueberry, including codling moth, spotted-wing drosophila, and brown marmorated stink bugs. So, for this issue of Facts for Fancy Fruit I thought I would share a quick report on the insect activity we've seen so far this season!



Figure 1. Universal bucket trap baited with pheromone lure to monitor codling moth. Photo: E. Y. Long

CODLING MOTH (monitored using universal bucket trap and Scentry codling moth lure, Figure 1, placed in research apple orchard in Tippecanoe Co.)

Date	Tippecanoe Co.	Total for month
Week of May 2	0	
Week of May 9	1	
Week of May 16	14 (biofix!)	20
Week of May 23	2	
Week of May 30	3	
Week of June 6	2	
Week of June 13	2	5
Week of June 20	1	
Week of June 27	0	

*Date of first sustained capture of moths. Begin tracking cumulative degree days!



Figure 2. Scentry monitoring trap for Spotted-wing drosophila, available from Great Lakes IPM. Photo: E. Y. Long

SPOTTED-WING DROSOPHILA (monitored using commercial Scentry monitoring trap and lure with 25% apple cider vinegar solution, Figure 2, placed in blueberry orchards in three counties in Indiana)

Date	Warrick Co.	Starke Co.	Tippecanoe Co.
Week of May 9	Traps set	n/a	n/a
Week of May 16	0	n/a	n/a
Week of May 23	0	Traps set	Traps set
Week of May 30	0	0	0
Week of June 6	0	0	0
Week of June 13	0	0	1 female
Week of June 20	5 males, 6 females*	2 males, 1 female	11 males, 7 females
Week of June 27	To be determined	2 males, 3 females	5 males, 4 females

*Females damage berries by cutting through skin to lay eggs.

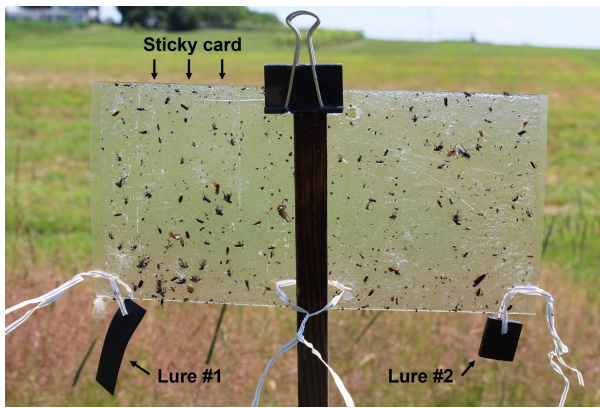


Figure 3. Trécé Pherocon dual stinkbug lures and clear sticky panel to monitor brown marmorated stink bug.
Photo: E. Y. Long

BROWN MARMORATED STINK BUG

(monitored using Trécé Pherocon dual stinkbug lures and clear sticky panel, Figure 3, placed in apple orchards in two counties in Indiana)

Date	Noble Co.	Tippecanoe Co.
Week of May 30	n/a	Traps set
Week of June 6	Traps set	0
Week of June 13	11	2
Week of June 20	2	1
Week of June 27	3	0
Week of July 5	To be determined	1

For those who have been monitoring these fruit insects for a while, these trap counts can provide some insight on activity in counties near or around you! If you do not have access to monitoring traps or are not comfortable using traps or identifying these insect pests, I hope these trap counts will be helpful to you in seeing how trap captures have changed as we progress into the summer. As a word of encouragement, anyone can learn how to set and use these traps, and they can help you better time your pest management strategies by more easily detecting the presence and activity of these important fruit pests in your orchards. As we move forward this summer, you can visit the Long Lab website for updates on trap activity as we have it: <https://extension.entm.purdue.edu/longlab/extension/#reports>.

As always, if you have questions about fruit insect pest identification or how to place and use monitoring traps, reach out to your local

extension educator or specialist so we can help! I also invite your requests for more information on fruit insects that are important to you!

Tissue Analysis for Grapes & Small Fruit

(Miranda Purcell, mrpurcel@purdue.edu)

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 ensure proper nutrition of the crop. Tissue analysis samples should be collected at the appropriate time to give the most meaningful results.

Grapes: samples should be taken about 70 days after full bloom or at the start of veraison, usually early to mid-August; collect 100 leaf petioles (only the petiole (stem) should be submitted for analysis, leaf blade can be discarded)

Strawberry: sample the first fully expanded leaves after renovation, usually in mid to late July; collect 30-60 leaves

Brambles: sample leaves on non-fruiting canes (primocanes) between August 1 and 20; collect 30-60 leaves

Blueberries: sample leaves during first week of harvest; collect 30-60 leaves

Be sure to 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/btny/ppdl/Documents/Compiled%20Lab%20Lists/PPDL-4-Soil%20Testing%20Labs-1.25.18.pdf>

For desired ranges of nutrient concentrations in small

fruits: <https://www.uvm.edu/vtvegandberry/factsheets/tissuetest.html>

Strawberry Chat July—Weed Control and Insect Pest Management

(Wenjing Guan, guan40@purdue.edu)

We discussed insect pests and weed control during renovation in this episode. Our special guests are Drs. Stephen Meyers, Samantha Willden, and Mr. David Doud. Steve and Sam are researchers from Purdue. Steve is the weed scientist in the Horticulture department; Sam is a postdoc researcher in the entomology department. David is the owner of David Doud's Countyline Orchard in Wabash, IN, and has over 30 years of experience in growing strawberries in a matted row system. You will hear researchers' and growers' opinions on the important topics. Enjoy the episode.

Fancy facts on strawberry pollination

(Samantha Anne Willden, swillden@purdue.edu) & (Laura Ingwell, lingwell@purdue.edu)

Insects provide an important pollination service in many crops including strawberry. Although strawberry flowers can self-pollinate without

insects, it is well known that supplemental pollination by insects can result in better formed and larger fruit. Therefore, pollination services in strawberry affects both quantity (berry size) and quality (berry shape) of yield. By evaluating strawberry fruit and insect activity, growers can determine if lack of pollination service by insects is causing yield loss.

Poor pollination of strawberry flowers results in small and malformed berries (Fig. 1). These malformations are the result of prevented berry growth around unfertilized seeds or "achenes." In contrast, berries that are well pollinated appear larger and well-formed. However, malformation by poor pollination and damage by tarnished plant bug can appear similar in many cultivars (Fig. 1). Tarnished plant bug nymphs in particular feed on developing strawberry seeds, creating similarly misshapen fruit. It is therefore important to pair fruit rating with pollinator observations when plants are flowering to rate pollinator presence and success.

Strawberry flowers are visited by an assortment of insect groups that contribute towards pollination. Most important of these are hover flies and bees (Fig. 2). These pollinators are most active on warm and sunny days between 9 AM-12 PM. These pollinators can be scouted during this time by observing flowers of 2-3 neighboring strawberry plants for 5 minutes. During this time, watch for flower visitation by these and other insects. If one or more visits occur, pollinators are considered present.

If no pollinators are present during observation intervals, and fruit is consistently small and misshapen, poor pollination may be an issue in this field. To improve pollinator presence and success, consider spraying fewer pesticides and avoid spraying during peak flowering periods. Planting pollinator-friendly native plants is also highly attractive to bees and many other

pollinating insects such as hoverflies, moths and butterflies and may recruit pollinators to target strawberry plants. See resources below for more information on pollinator-friendly plants.

[Pollinator-Friendly Native Plant Lists | Xerces Society](#)

[Recommended Indiana-native Plants for Protecting Pollinators \(purdue.edu\)](#)

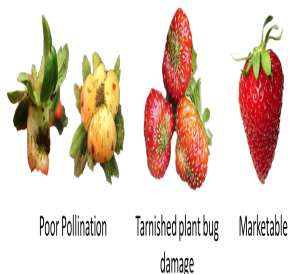


Figure 1. Examples of strawberry fruit with poor pollination (left), tarnished plant bug feeding damage (center) and a marketable berry (right).

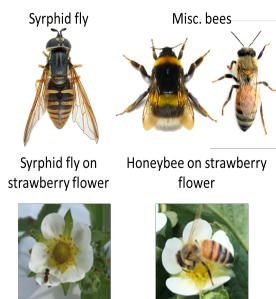


Figure 2. Common pollinators found on strawberry flowers.

Purdue Fruit, Veg & Hemp Field Day

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

Purdue Fruit, Veg & Hemp Field Day
July 21, 2022

Purdue Meigs Ag Center
9101 S 100 E, Lafayette, IN 47909

Registration is now open!

<https://tinyurl.com/ypfubpkp>

2022

Purdue Fruit, Veg, and Hemp Field Day

THURSDAY JULY 21, 2022
Purdue Meigs Ag Center
9101 S 100 E, Lafayette, IN 47909

REGISTER:
<https://tinyurl.com/ypfubpkp>

PRESENTED BY: **PURDUE UNIVERSITY** Extension



Small Farm Education Field Day

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

Small Farm Education Field Day

July 29, 2022

Purdue Student Farm

1491 Cherry Lane, West Lafayette, IN

Registration is now open!

<https://www.purdue.edu/hla/sites/studentfarm/>

Small Farm Education Field Day

2022

FIELD DAY JULY 29

In-person at Purdue Student Farm

www.purdue.edu/hla/sites/studentfarm/events/

PRESENTED BY: The Purdue Student Farm

PURDUE UNIVERSITY

Horticulture and
Landscape Architecture



Pinney Purdue Vegetable Field Day

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

Pinney Purdue Vegetable Field Day

Aug. 9, 2022, 5 to 8 p.m. Central Time.

Register at <https://puext.in/VegEvening2022> .

More info

at <https://extension.purdue.edu/events/county/po-rter/2022/08/pinney-purdue-vegetable-field-day.html>

It is the policy of the Purdue University that all persons have equal opportunity and access to its educational programs, services, activities, and facilities without regard to race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability or status as a veteran. Purdue is an Affirmative Action Institution. This material may be available in alternative formats. 1-888-EXT-INFO Disclaimer: Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.

Facts for Fancy Fruit © Purdue University - fff.hort.purdue.edu

Editor: Peter M Hirst | Department of Horticulture and Landscape Architecture, 625 Agriculture Mall
Dr., West Lafayette, IN 47907 | (765) 494-1323