PURDUE UNIVERSITY

FACTS FOR

FANCY FRUIT

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A Newsletter for Commercial and Advanced Amateur fruit growers.

In This Issue

Crop conditions

(Chloe Rose Henscheid, richa267@purdue.edu) & *(Wil Brown-Grimm, wbrowngr@purdue.edu)*

All of our crops at the Meigs Horticulture Farm in Lafayette, Indiana are maturing very nicely. The warm nights have helped fruit size up in the last two weeks. We have seen high thrip populations on all fruit trees, although they don't seem to be doing much damage. This week the Japanese beetles decided to show up all at once. They are covering our brambles and doing a lot of damage to the leaves. We have plums, red raspberries, and blackberries, all ripening this week and they're delicious! Most of the fruit on the apple trees are starting to change colors. No disease pressure at this point. We will continue completing cover sprays in hopes of not seeing any diseases this year.

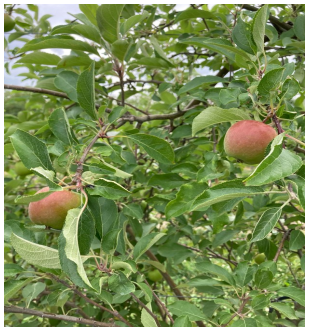
Apple (Pixie Crunch): Maturation

Grapes: Berry Touch/ Bunch Closure

Pear: Maturation

Peach: Maturation

Plum: Maturation



Apple (Rosalee): Maturation

Paw Paw: Maturation

Aronia: Maturation

Blackberry: Green fruit to ripe fruit

Black Currant: Ready to harvest

Hot and dry conditions ahead

(Beth Hall, hall556@purdue.edu)

As I write this article, in a cool, air-conditioned office, I hear others talking about how hot it is outside. I see weather app icons showing bold suns that stress how sunny and hot conditions are and will continue to be. I read Special Weather Statements, issued by the National Weather Service, about an extended period of hot and humid conditions continuing. It is that time of year, so how hot has it been and how long with these conditions continue?

Interestingly, as I look at the last 30 days, most of Indiana has been only one-to-two degrees (F) above normal with respect to average daily temperature with most of that influenced by the daily maximum (high) temperatures as opposed to the daily minimum (low) temperatures (Figure 1). However, something atmospheric scientists call a “heat dome” has moved into our area. These are typically rather large in spatial extent (i.e., regional, not state-sized) and tend to stick around for a while. Due to this stagnation, winds are typically calmer, preventing both vertical mixing of the cooler air above and horizontal mixing from storm systems moving through the area. Growing degree-day accumulations have therefore been increasing faster than normal and will continue to do so over the next few weeks. Figures 2 and 3 show the accumulated modified growing degree days and departures from

normal, respectively, since April 15th. Across Indiana, these growing degree days have accumulated over 220 units higher than normal for this time of year.

When these stagnant conditions persist, a rapid intensification of drought is more likely. Certainly, an extended period of little-to-no rain will cause a drought but combine that with above-normal temperatures and increased rates of evapotranspiration will occur. That is what has been happening over the past few weeks and has led to the U.S. Drought Monitor introducing "Abnormally Dry (D0)" status across much of Indiana (Figure 4). Another characteristic of these stagnant high-pressure areas is that any precipitation that might occur is likely to be very light and localized. Therefore, widespread improvement is unlikely until this system gets pushed out of the region and a more active weather pattern can set in.

According to the national Climate Prediction Center, there is high confidence that above-normal conditions will continue in our area through the rest of June and into early July. The big question is whether there will be enough precipitation during this period. Climate prediction models are only slightly favoring above-normal precipitation over this two-week period with higher chances early on. Even then, I would expect amounts to be relatively localized and short-lived. The current 7-day forecast of precipitation is predicting only 0.25"-0.5" in southern Indiana with higher amounts for the northern part of the state (Figure 5). Combine this with the 7-day forecast of reference evapotranspiration – that range from 1.5"-1.75" — and there is likely to be a moisture deficit developing quickly.

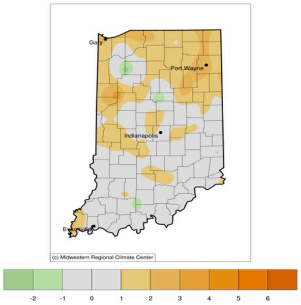


Figure 1. Average temperature (F) departure from the 1991-2020 climate normal period for May 22 through June 19, 2024.

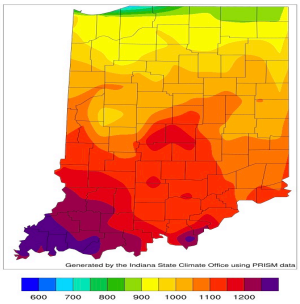


Figure 2. Accumulated modified (50 F / 86 F) growing degree days for April 15 through June 19, 2024.

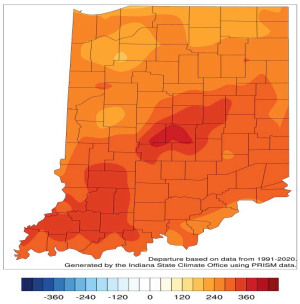


Figure 3. Accumulated modified (50 F / 86 F) growing degree-day departures from the 1991-2020 climate normal period for April 15 through June 19, 2024.

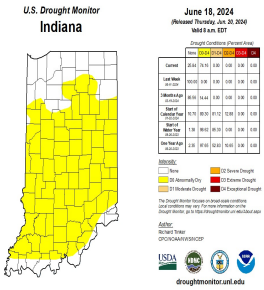


Figure 4. U.S. Drought Monitor map for Indiana based on conditions through June 18, 2024.

Figure 5. Precipitation forecasted amount for the 7-day period from June 20-27, 2024.

Tips for tackling thrips in your fruit

(Elizabeth Yim Long, long132@purdue.edu)

Figure 1. Thrips larvae (note lack of wings) on the underside of a plant leaf.
Photo: John Obermeyer

I'm hearing that thrips are throwing many of us for a loop this season! Some of you may know that thrips do not overwinter here in Indiana, so each spring season they migrate up our way on winds blowing up from the south. Sometimes these southern winds occur earlier or later each spring, depending on weather conditions, and I am guessing that thrips hitched a ride up on southern winds a bit earlier this season than last – but this is just speculation on my part! Additionally, dry conditions and above-average temperatures can cause thrips populations to grow quickly to damaging levels.

As with all insects, there are many different kinds of thrips and each has preferences for the kinds of plants and fruits they attack. In strawberries, it is eastern flower thrips that is most commonly a problem, while in tree fruit it is commonly western flower thrips. Regardless of the species, thrips can damage blossoms early in the season, as well as newly developed and mature fruits. Thrips feed by dragging their sharp, waffle cone-like mouthparts across the surface of flower petals and fruit, rasping the surface cells and causing them to ooze, and it is this liquid that they feed on.

Signs of thrips themselves can be hard to detect if you don't look closely and scout regularly, *because they are small – about 1/16th of an inch long!* To make sure you don't miss thrips activity, keep a hand lens in your pocket and scout regularly (at least once a week) by shaking or tapping blossoms over a white paper plate/bowl where the orange-yellow-colored nymphs (Figure 1) and adults will contrast nicely against the white background. You can also dip blossoms into a container of isopropyl alcohol and thrips that are present will fall off into the liquid. Yellow sticky cards may also be used to monitor thrips activity. **Symptoms of thrips** are more obvious: blossoms that are fed on by thrips may be misshapen, and injury on small fruits may present as dull or bronzed-color fruits (note: mite injury may look similar), while on tree fruits injury may appear as silvering or silver patches on ripe fruit.

Scouting will help you determine the need for action, but it is important to monitor several blossoms and fruits at several different places in your fruit planting. If you've had serious thrips populations in the past, you can start in those same areas when you begin monitoring the next season. In most cases, it's recommended that you sample 50 blossoms from 5-10 areas of your fruit planting to look for thrips, and sample 50 small fruit berries from each of 5-10 areas, or 10 tree fruits from each of 5 areas in your fruit planting for thrips. This may seem like a lot I know, but it is critical because thrips may not be present uniformly throughout your fruit planting and you don't want to miss them if they are there. The action threshold differs among fruit crops, but in general the threshold is low, with

insecticide applications being recommended when as few as 2-5 thrips are detected per group of scouted blossoms/fruits.

Last, remember that thrips can feed on many different crop and non-crop plants, so weed management and the timing of mowing weeds/weedy patches around your planting is important to consider. Mowing weedy edges or flower patches while fruit plants are blooming or fruits are developing may result in the thrips moving from those host plants right over to your fruit planting, doh! It may eventually be necessary for you to apply insecticides to help reduce thrips populations in your fruit planting, and if you do, use insecticide products that are labelled for thrips specifically (other insecticides may not be effective against thrips), and try to avoid broad-spectrum insecticides, which also kill important natural enemies of thrips, like minute pirate bugs.

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 (see Figure 1 below)

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

Indiana Horticultural Society Summer Meeting

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

June 25

Tuttle Orchards
5717 North 300 West, Greenfield, IN

We are pleased to announce that the fruit and vegetable growers will be joining together for a summer field tour being hosted by Tuttle Orchards in Greenfield, IN on June 25. Topics to be covered include fruit production, vegetable production, farm marketing, and agritourism.

There's something here of interest to everyone so I hope you will plan on joining us. Although we encourage membership in grower organizations such as Indiana Horticultural Society (IHS), Indiana Vegetable Growers Association (IVGA) and Indiana Farm Marketers Association (IFMA), membership is not required to attend the field day and all those interested are welcome to attend.

Tuttle Orchards was founded by Roy Tuttle who was born on the farm in 1893. The farm has been operated over the years by Virginia & Raymond Roney (2nd generation), by their two sons Mike and Tom E. Roney (3rd generation), and Thomas & Ruth Ann Roney (4th generation). Currently, Mike & Helen, Thomas, and Ruth Ann are managing the daily operations of the orchard along with a staff of approx. 100 in peak season.

Tuttles is a diversified operation that includes apple production (8,000 trees on 45 acres), cider production (23,000 gallons annually), vegetable production (30+ crops on 30 acres), agritourism (corn maze, kids' area), field trips & tours (approx. 15,000 annual tour attendees), farm store (open year round), CSA (approx. 100 summer/50 winter members), retail greenhouses, high tunnels (3 houses in tomatoes/winter greens), events. About 95% of the orchard income is retail sales. Very limited wholesale to other growers, cideries, farm markets, and local stores. Tuttle's newest venture is an onsite café and sweet shop that will be open year round. More information on the farm is available at their website:

http://www.indianapolisorchard.com

We'll be visiting different aspects of the Tuttle farm operation, including:

- Fruit Production: tour of apple plantings
- Vegetable Production: tour of vegetable crop plantings, high tunnels, and chemical storage facilities.
- Produce Packing tour: tour of apple grader, cold storage, cider production, vegetable washing, CSA packing, and food safety compliance areas.
- Retail/Agritourism tour: overview of farm store, food service on the farm, agritourism, staffing, POS system.

Agenda:

9:00 am	Registration at the farm
9:30 am	Welcome, introductions, comments from Tuttle Orchard and Purdue Extension
9:45 am	Organize into 4 groups
10:00 am	Session 1 – fruit production
11:00 am	Session 2 – vegetable production
12:00 pm	Buffet lunch at the farm
1:00 pm	Session 3 – produce packaging and handling
2:00 pm	Session 4 – retail/agritourism
3:15 pm	Closing comments / discussion
4:00 pm	Adjourn

IFTA Summer Tour –

California

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

IFTA Summer Tour – California

The 2024 International Fruit Tree Association (IFTA) Summer Study Tour will be three full days (July 16-18) in California's Sacramento-San Joaquin Valley, where current plans are for participants to visit the state's largest apple packer just as Gala harvest will be starting, as well as new low-chill apples, some of the most progressive apple, sweet cherry, pear, and peach growers (including high density peach operations where robotic harvesting has been tested), and perhaps quick visits to several lesser-grown stone fruits like apricots, plums, and olives, as well as researchers at UC-Davis and one of California's leading tree fruit nurseries!

For more information:

https://ifruittree.org/event/ifta-california-summer-study-tour-july-16-18-2024/

Purdue Fruit and Vegetable Field Day

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

Purdue Fruit and Vegetable Field Day on July 18, 2024

Long Description

We are happy to announce that Purdue Extension is presenting its annual Fruit and Vegetable Field Day on July 18, 2024, at the Throckmorton/Meigs Horticulture Farm, Lafayette, IN.

Registration is now open! Register here: Purdue Fruit and Vegetable Field Day

The program is now available. Download HERE.

Fruit and Veg Field Day 2024_Agenda FINAL_page1

Fruit and Veg Field Day 2024_Agenda FINAL_page2

Contact Lori Jolly-Brown or Petrus Langenhoven if you have any questions.

Purdue Small Farm Education Field Day

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

July 25, 2024 Purdue Small Farm Education Field Day REGISTRATION NOW OPEN!

Attendees, exhibitors, and sponsors register here: Purdue Small Farm Education Field Day

2024 presentations:

- Insect dynamics in HTs
- Companion Plants and Syrphid Fly Recruitment
- High Tunnel Table Grapes
- Advantages and Considerations of Raised Bed Gardening
- High Tunnel Sweet Pepper Production Strategies and Variety Selection
- Tarps, fire, and cultivation- weed management updates and demonstrations.
- Strawberry production and strawberry

propagation at small farms
- Soil moisture sensors
- Growing Open-Pollinated Corn on the Small Farm
- Postharvest Wash/Pack Design for Small Farms

The 2023 Purdue Small Farm Education Field Day was held at the Purdue Student Farm in West Lafayette, Indiana. With 105 participants registered, the in-person event featured an array of on-farm demonstrations and was a resounding success.

Nearly 84% of attendees reported that they learned something they didn't know before. A third (34%) indicated they plan to adopt recommended practices for diversified farming systems, and a quarter (24%) plan to adopt recommended practices for creating, improving, or strengthening their business. Nearly half (45%) indicated they plan to adopt practices for horticulture and the environment or practices that will increase efficiency (42%). Over a third plan to adopt practices/technologies for the conservation of resources (37%). Nearly half (46%) of past field day attendees indicated that they had adopted new, recommended practices for their farm or operation. When asked what new practice they had adopted, participants responded:

- Alternate BT and Spinosad on brassicas.
- Pest scouting.
- Applied BT for brassica caterpillar complex control.
- Integrated pest management

Over three-quarters (80%) of participants reported that they had experienced financial improvements because of adopting new, recommended practices from the information presented at past field days.

Attendees commented ……

- "I recommend this event to any beginner small-scale producer.
- I brought my sons and my father to this event. It was a family education day for sure, and each one of us learned several things we didn't know. Please continue to offer these events. It's very helpful!
- Good information and a fun, interesting presentation
- I like the wide variety of topics, and I think that so much could be covered in such a short amount of time.
- Lots of helpful information covering a wide variety of topics.
- Always learn, gain knowledge, and learn from questions others ask. When I get home, I can read the literature provided and share it with family in Virginia who farm.
- Very informative and builds on previous research.
- Everyone should learn about these topics.
- It was a good way to be exposed to a variety of horticultural crops.
- I am just beginning to develop my vegetable garden. The information given at the Field Day program was very useful, and I am confident I will create a beautiful garden space with plants that will give me a great yield. Also, I appreciate learning what insects I should keep an eye on."

The event featured an array of "demonstration stations" on the farm where participants learned about a variety of topics:

- High Tunnel Pepper Production and Variety Selection
- High Tunnel Table Grape Production
- Silage Tarps and Their Potential Uses on

Small Farms
- Growing Grains on the Small Farm – Dry Edible Bean Variety Trial
- Predator-Prey Dynamics in High Tunnel Crop Production
- Biorational Pesticide Efficacy for Controlling Caterpillars and Flea Beetles in Crucifer Crop Production
- Black Soldier Fly Composting and Specialty Crop Production
- Raised Garden Beds for Vegetable Production
- Postharvest Food Safety Demonstration
- Choosing Fertilizer Injectors for Drip Irrigation for Small Plots

To learn more about the field day, visit our webpage at www.purdue.edu/hla/sites/studentfarm/events/ or contact Lori Jolly-Brown or Petrus Langenhoven.

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