PURDUE UNIVERSITY

FACTS FOR FANCY FRUIT

Issue: 21-05
June 7, 2021

A Newsletter for Commercial and Advanced Amateur fruit growers.

In This Issue

Crop Conditions

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

Black raspberry: Pre-bloom

Blackberry: Bloom

Apple: fruit 15-20 mm

Grape: Pre-bloom

Updated climate normals led to a cooler May

(Beth Hall, hall556@purdue.edu)

The month of May in Indiana was 2°F-4°F below normal across the state, based upon the new 1991-2020 climatological normals that were released last month. Climatological *normals* are roughly the 30-year average of weather variables and are updated every 10 years. Prior to the new normals being released, climatologists were using the 1981-2010 period for the climatological normals. However, since data from 1981-1990 were dropped and 2011-2020 were added, this modified the new climatological normals to

account for climate change trends such as warmer temperature and either wetter or drier precipitation values depending upon the time of year. Therefore, the fact that May 2021 ended up being cooler *than normal* was likely due more to the use of the updated climatological normals being warmer than any other remarkable cause.

May's precipitation totals across the state was near normal throughout most of the central and northern counties. However, the southern third of Indiana was much drier with monthly totals falling within the 25th to 75th percentile of normal (Figure 1). This has led to the development and expansion of abnormally dry conditions in various counties in the south and the gradual elimination of abnormally dry conditions in the north (Figure 2). The climate outlooks for both June and the June-July-August periods are only slightly favoring above-normal precipitation, so forecasters and climatologists are keeping an eye on conditions to closely track whether or not drought develops further across the state or gets eliminated. At this time, there is not serious concern of an intense drought occurring such as what was experienced in 2012, but with increased temperatures and the potentially longer periods of dryness between rainfall events, water stress could occur. This will raise concern for those areas dependent upon groundwater, particularly where irrigation is occurring and groundwater supplies haven't fully replenished over the winter and early spring.

Modified growing degree-day (MGDD) accumulations since April 1 have started to catch up to near average for the 1991-2020 period. Northern counties are slightly ahead of normal MGDD accumulations and southern counties are still slightly behind normal (Figure 3). However, when compared to just the past 4 years, 2021 accumulations are still well behind what they were in 2017 and 2018 (Figure 4) across the state.

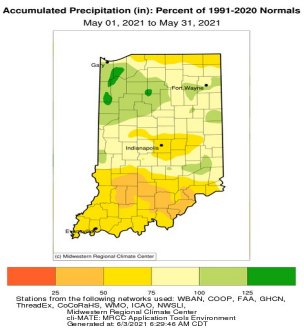

Figure 1. The accumulated precipitation percentage of normals for May 2021.

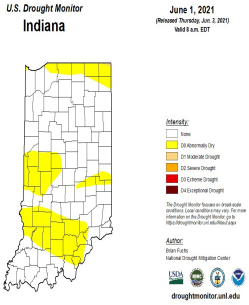

Figure 2. The US Drought Monitor status for June 1, 2021.

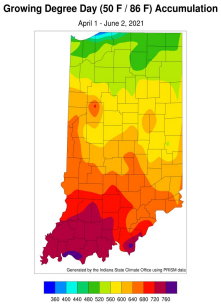

Figure 3. Modified growing degree day accumulation from April 1 to June 2, 2021.

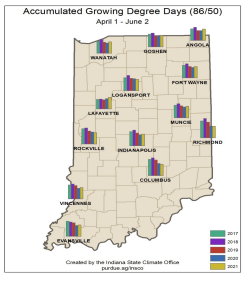

Figure 4. Comparison of 2021 modified growing degree day accumulations from average for April 1 – June 2 to the past four years.

Bloom time grape sprays

(Miranda Purcell, mrpurcel@purdue.edu)

Shoots are at various stages of development across the state with some primary shoots at or near bloom. The most important time of the year for fruit disease control is from pre-bloom to 4-5 weeks past fruit set. The potential for fruit infection drops significantly 4-5 weeks post-bloom. Important diseases to control during this time include black rot, downy mildew and powdery mildew. Fruit of the most commonly planted varieties is resistant to black rot, downy mildew and powdery mildew, but rachises (stems) and leaves remain susceptible. Therefore, protection against these fungal pathogens is required throughout the growing season.

A list of recommended products can be found in The Midwest Fruit Pest Management Guide. It is important to get good coverage in the fruit zone. Also, beware that downy and powdery mildew pathogens are especially prone to fungicide resistance, so avoid back-to-back applications of any one systemic fungicide class (i.e. FRAC 3, 7 or 11).

Fungicide Use Midseason and On

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

For those of you still fortunately enough to have apples, disease management continues to a greater degree than those of us without a crop. Around now (the beginning of cover sprays), the most serious apple pathogens are generally less active, terminal buds have set, leaves have hardened off (and are now less susceptible) and weather is usually getting hotter and drier. Unfortunately, this year has been a bit screwy, with warm-ups, cool downs and frosts, and few trees have set terminal buds. The continued fungicide applications are necessary to protect against the continuing pathogen pressure.

If you are still within the 77-day pre-harvest interval, get that last application of mancozeb on while you still can. It is one of, if not the best protectant against the summer rots, along with controlling scab. When you can no longer use mancozeb, switching over to ziram (with a 14 d PHI) or captan (see label as PHI varies) as a tank-mix or rotation partner is necessary to protect fruit during these frequent and heavy summer rains for the remainder of the season.

The judicious addition of Pristine, Merivon, Luna Sensation, Flint, or Sovran provide excellent control of summer diseases. These are all good to excellent on the summer rots and sooty blotch/flyspeck. In hot, wet years, bitter rot is an especially bad problem on HoneyCrisp, Gala, Empire, and Golden Delicious. Think of what your crop could look like in August, when it is too late to do anything and **protect fruit now**! Let me remind you (Fig. 1)! Remember, all of these have strobilurins (FRAC code 11) so your decision to use these fungicides during the summer should be balanced against the need for control of early season diseases, the potential for damage by the summer rots, and the limited number of applications recommended on the label.

Strobilurins aren't your only options, though. Omega provides summer rot disease control (in the fair to very good category), and is a completely different mode of action (FRAC 29). It also, weirdly enough, controls two-spotted spider mite, red mite and apple rust mite. It has a 28-d PHI. Newer options, Aprovia, Fontelis, and Miravis (all FRAC 7) are good to excellent against scab and bitter rot, along with some early season diseases like powdery mildew. Aprovia has a 30-d PHI, Fontelis has a 28-day PHI and Miravis has a 30-d PHI. All are FRAC 7, meaning they are

succinate dehydrogenase inhibitor. As Merivon, Pristine and Luna Sensation all have FRAC 7 fungicides, be careful with your rotations!

Lastly, the sooty blotch/flyspeck fungal complex begins the infection process around third cover when rainfall is frequent (and when forest trees are nearby), but they are generally not observed as a problem until later in the season. The incubation period for the sooty blotch/flyspeck pathogens is about 30 days. Keep in mind that captan and ziram provide effective protection for 10 to 14 days at the most (and a bit longer for Topsin M). Topsin-M is effective for most species of sooty blotch/flyspeck, but much less effective on the summer rots. Aprovia, and Miravis are labeled for sooty blotch/fly speck, as is the newer FRAC 3 fungicides, Cevya (12 h, 0 d PHI), which is an excellent choice if you are also trying to control powdery mildew or even apple scab, if weather ends up cooler.

Again, early prevention is better than later regret, but fungicides are only part of the equation. Making sure trees are well pruned, and that the canopy is open to increase airflow and allow pesticide applications to reach the entire tree is essential to controlling these diseases. Another essential piece of management is sanitation: Removing mummies and windfalls reduces over-summering and overwintering inoculum, minimizing the risk of spread. All of these suggestions are easily made, but very difficult to implement.

Figure 1. Bitter rot. Note the mummy I hold personally responsible for this.

Figure 2. Flyspeck and sooty blotch.

Mason bees (for fun!) and fruit pollination, anyone?

(Elizabeth Yim Long, long132@purdue.edu)

I am a bit late on the topic of bees for fruit pollination, especially tree fruit, but I wonder how many readers use or maintain spring mason bees for pollination of tree fruits? If not for pollination, then perhaps just for fun? (Figure 1). If not, you might consider this for next season!

Those who rely on wild bees to pollinate their early-flowering fruit crops, already know that solitary bee species, including the mason bees, will readily search for and collect pollen during the cooler temperatures in early spring, so these bees can provide valuable pollination services when cooler temperatures render honey bees less active.

Mason bees are different from honey bees in several ways: they are solitary (one female lives alone and collects pollen for each of her offspring), they use hollow stems as their nesting sites, within each stem they build individual cells for each of their bee larvae using mud (thus the name mason bees), and they carry pollen on the bottom of their abdomens rather than on pockets on the hind legs – so cute! (See Figure 2 below for a diagram of the life cycle).

Although mason bees are capable of stinging, many refer to these bees as “stingless bees,” because they are docile and non-aggressive, which makes them a perfect project for kids who

want to see bees in action, up close and personal!

I've been keeping mason bees in my backyard for the last 4 years – just for fun, and they have been wonderful to watch! Mason bee adults only live for about 1 month (May-June) before their life span is complete, but that's plenty of time for them to contribute to pollination and for you to enjoy hosting them! All these bees need to be at home in your backyard or orchard are nesting sites (hollow stems), plenty of flowers (fruit blossoms, spring wildflowers, etc), access to mud, and if in the backyard, they will need a box or house where the stems are protected from rain and predators. Michigan State University has a great extension publication about Building and Managing Bee Hotels for Wild Bees. Take a look and consider hosting these bees in your backyard or orchard next year!

Figure 1. A mason bee, peeking out from her stem nest in my backyard bee house. Photo: E. Y. Long

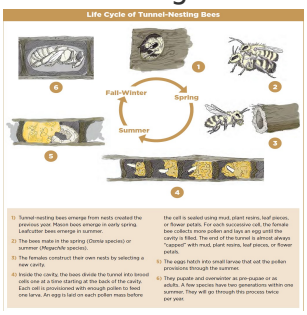

Figure 2. Life cycle of tunnel-nesting bees. Diagram from Building and Managing Bee Hotels for Wild Bees, Michigan State University. Image credit: Sarah Scott, Michigan State University.

Extension Events

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

Small Farm Education Field Day July 29th, 2021 at the Purdue Student Farm.

Small Farm Education Field Day Webinar Series August 2, 4, 6, 9, 11, 13, 2021.

REGISTER TODAY: https://www.purdue.edu/hla/sites/studentfarm/events/

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