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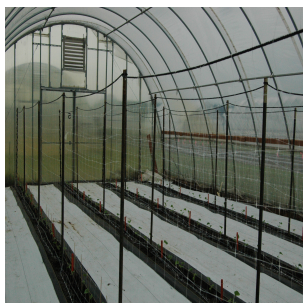
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Crop Conditions

(Peter M Hirst, hirst@purdue.edu, (765) 494-1323) & (Lori K Jolly-Brown, ljollybr@purdue.edu)



Despite the frequent rain, crops are generally progressing well here at Purdue Meigs Farm



Cantaloupe plants in Meigs high tunnel



Cantaloupe plants



Apple - fruit development



Pawpaw - fruit development



Blackberry - fruit approaching maturity



Raspberry - harvest beginning



Strawberry – harvest continuing



Grape – fruit development

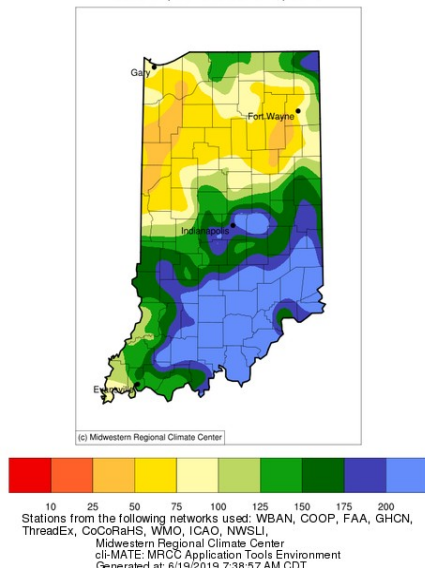
Indiana Climate and Weather Report

(Beth Hall, hall556@purdue.edu)

6/20/2019

Some weeks I wonder if I could just re-use the previous week's weather and climate article! The story seems to be the same: It's been wet and more rain is expected. It is impressive, however, astounded when to see the contrast in June precipitation (so far) for precipitation across the state. It seems plenty wet in northern Indiana, I can't even imagine how wet it must be to the south!

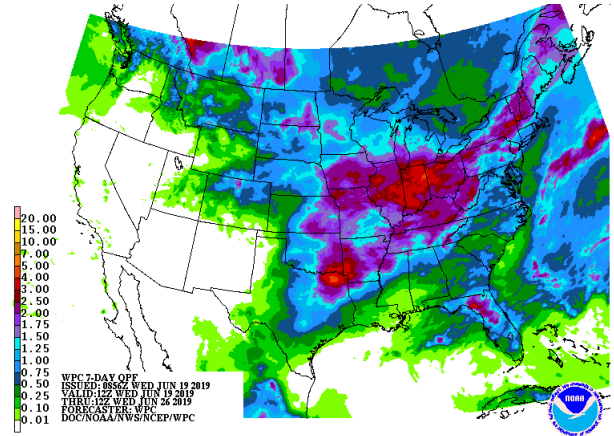
Accumulated Precipitation (in): Percent of 1981-2010 Normals
June 01, 2019 to June 19, 2019



Precipitation percent of mean for Jun 1 – Jun 19 where a value of 100 would indicate the normal amount for 1981-2010

Unfortunately, the forecast predicts Indiana will continue to be

wet. The 7-day Quantitative Precipitation Forecast (QPF) is predicting 3"-5" across most all of the state. Beyond that, the 6-14-day outlook (Jun 24 to Jul 2) is indicating a medium-to-high probability of above normal precipitation. Even the 3-4-week outlook (Jun 29 – Jul 12) shows a significant probability of above normal precipitation (at least for the northern two-thirds of the state). The hope will be that all of this above-normal precipitation will be intermittent enough to let some of that moisture evaporate and transpire with plant growth and warmer temperatures.



7-day precipitation forecast representing June 19 – 26, 2019 Source: NOAA Weather Prediction Center

Temperatures have not helped the evapotranspiration hopes. For June (so far), temperatures across the state have been 1°F-3°F below normal. Fortunately, the 8-14-day outlook (June 26 to July 2) is showing significant confidence that temperatures will be above normal. Unfortunately, the 3-4-week outlook flips back to predicting below-normal temperatures. Translating to modified growing degree-days (accumulating since April 1), the northern half of Indiana is 50-150 units below normal, where the southern half is near normal.

It's looking like another hot and muggy summer for Indiana!

Beth Hall, PhD

Director, Indiana State Climate Office

Fungicide Use Midseason and On

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

After second cover, the most serious apple pathogens are generally less active, as terminal buds have set, leaves have hardened off (and are now less susceptible) and weather is usually getting hotter and drier. **Just not this year!!!** This is the time when we often dial it back a notch in the fungicide department. One word of advice for this year: Don't!

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.

During a record wet year like this one, 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.



Figure 1. Bitter rot, 2018. Note the mummy I hold personally responsible for this

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. The newest options, Aprovia and Fontelis, are both 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. Both 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.

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 2. Flyspeck and sooty blotch, 2018

Annual Strawberry Production

(Wenjing Guan, guan40@purdue.edu)

At the Southwest Purdue Ag Center, we are studying annual strawberry production on plastic mulch. Our hope is to gather information for best production practices in our area. As we learn about insect and disease problems, we will pass this information on to producers. This article is about the insect pests we have observed in our strawberries that were planted in March 2019.

Armyworm– Toward the end of the spring harvest, we observed significant damage on strawberry fruit caused by armyworms. Beet armyworm and yellow striped armyworm larvae were found in the field (Figure 1 and 2). They feed on both green and ripe strawberries. More than 30% fruit became unmarketable because of the insect feeding. Damage was also observed on flowers.



Figure 1 Beet armyworm on a strawberry plant



Figure 2 Yellow striped army worm feeding on strawberry fruit

Armyworms also cause significant damage when they chew on strawberry crowns and leaves of summer-planted young strawberry plants. *Midwest Fruit Pest Management Guide* provides several options for controlling the pest. For organic growers, Bt products can be used to control armyworms if larvae are young and populations are not too large. Spinosad, another biologically derived pesticide is also effective against young larvae.

Thrips- Thrips feed on strawberry flowers, causing leathery fruit that fail to ripen evenly. Thrips damage was observed earlier in the harvest. Although it did not reach the threshold of 10 thrips per blossom. The damage became more severe as the season moved forward. More information about this pest and the control can be found in Rick Foster's article [Eastern Flower Thrips in Strawberries](#).

Click beetle- Click beetle is the adult stage of wireworms. It is not a major pest of strawberries. But the adult can cause damage on ripe strawberry fruit (Figure 3). The damage was relatively minor in the field.



Figure 3 Click beetle feeding on ripe strawberry fruit

ISDH- The Inspection Process Has Started!

(Scott Monroe, jmonroe@purdue.edu) & (Amanda Deering, adeering@purdue.edu)

On June 5, the Indiana State Department of Health (ISDH) mailed letters to produce growers having annual food sales over \$500,000 informing them that inspections of produce farms would start in July. Due to their sales volume, these growers are expected to be in compliance with the Food Safety Modernization

Act Produce Safety Rule (21CFR § 112) as of the 2019 growing season. The letters also outline the inspection process for 2019.

As part of the inspection process, produce growers identified as having over \$500,000 in food sales will be contacted sometime in June to schedule an inspection. The inspections will begin in July. Here are some things to keep in mind as ISDH rolls out their 2019 inspections:

1. There will be no surprise inspections. Growers will be contacted prior to any inspector visiting the farm.
2. The inspections will be conducted by ISDH. The Food and Drug Administration (FDA) will not be directly involved in inspections in Indiana.
3. Inspections will largely be educational in nature and growers will be given the opportunity for corrective actions to be taken. Immediate action will only be taken if egregious conditions are found to exist.
4. Inspections will consist of an initial interview, walk-through of the farm, and an exit interview. While Indiana has its own form, inspection questions will be based on FDA Form 4056 that can be found on the FDA website.
5. Unlike audits, inspections will not utilize a point system. Growers will either be in compliance with the rule or not.

Along with a letter to produce growers, ISDH also sent information detailing what growers can expect during an inspection and how to schedule an On Farm Readiness Review (OFRR). All documents sent to growers have been posted on the Farm Produce Safety Initiative website (<https://www.in.gov/isdh/25773.htm>). The On Farm Readiness Review is a FREE assessment of compliance with the Produce Safety Rule. Upon request, a team consisting of personnel from ISDH, Indiana State Department of Agriculture, and Purdue Extension will visit your farm and conduct the review. Upon completion of the review, you will be informed of where your farm is on the compliance spectrum and be advised concerning those aspects of compliance where you might improve. The whole process takes 2-3 hours. This is NOT an inspection and the service is completely confidential and free. Those interested in scheduling an On Farm Readiness Review should contact ISDH at (317) 476-0056 or email ProduceSafety@isdh.in.gov. For more information concerning the Produce Safety Rule and produce food safety, check out our website at www.SafeProduceIN.com.

Scott Monroe, Food Safety Educator
Amanda Deering, Clinical Assistant Professor

Family Farm Estate, Succession Planning Training

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

Registration is now open for Indiana Agricultural Law Foundation's 2019 Estate and Succession Planning for the Family Farm event in Indianapolis. Family farmers and attorneys are encouraged to attend on Tuesday, July 30 from 8:30 a.m. to 4:30 p.m. at the

Indiana Farm Bureau headquarters to learn about estate and succession planning as it pertains to the long-term future of family farms.

The event's sessions include:

- **Land Value Considerations in Succession Planning** with Dr. Jason R. Henderson, Purdue
- **Agricultural Estate Planning Basics** with Lindsay Schmitt, Farmer Scott Ozete Robinson & Schmitt LLP
- **Estate Litigation and Competency Issues: How to Avoid Common Pitfalls** with Kisti Good Risse and Stuart Boehning, Bennett, Boehning & Clary, LLP
- **Protecting the Family Farm From the Nursing Home and Forced Partition Sales** with Dan Gordon, Gordon & Associates
- **FSA Options for Getting New and Beginning Farmers Into the Operation** with Greg A. Foulke, Indiana Farm Service Agency
- **The Bad, The Ugly and the VERY Good of Farm Transition Planning** with Jeanne Bernick and Jim Rein, CPA, K•COE ISOM

Registration ends July 23 unless maximum capacity is reached in advance of that date. You can register today at www.INAgLaw.org. Registration is \$35 per person and \$60 for all attorneys seeking CLE credits (six credit hours).

Purdue Extension Events

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

June 25, 2019 Indiana Horticultural Society Summer Meeting
Co-sponsored by Indiana Vegetable Growers' Association
Huber Orchard & Winery, Starlight, IN

You are warmly welcomed to join us for the summer meeting of the Indiana Horticultural Society, held in conjunction with the Indiana Vegetable Growers' Association. It will be held Tuesday June 25 at Huber Orchard and Winery, in Starlight, IN. Huber's is one of the largest and best agri-tourism destinations in the Midwest. The meeting will focus on commercial production of fruits and vegetables, and farm marketing. All those interested are welcome to attend.

Schedule (subject to change)

(all Eastern Daylight Time):

Tuesday, June 25

9:30 am Convene and registration at Huber Orchard and Winery.

10:00 am Introductions, brief walking tour of facilities – winery, market, icecream store, banquet hall

10:30 am Field tour – apples

11:45 pm Lunch – \$10 – RSVP requested (see below)

1:00 pm Field tours – peaches, vegetables, small fruit

4:00 pm Wrap up and conclude

Optional winery and distillery tour for those interested

Registration

A registration fee of \$5.00 per family or farm is payable at registration.

June 27, 2019 Southwest Purdue Ag Center Field Day

Southwest Purdue Ag Center

Contact Barb Joyner, joynerb@purdue.edu

Horticultural related topics include: Organic Tomato Production, High Tunnel Grafted Cucumber & Specialty Melon Production, Applying IPM Principles across Cropping Systems to Increase Insect Pollination and Profitability, Annual Strawberry Production. A meal will be included, and PARP classes also will be available after lunch. To register, email joynerb@purdue.edu, call 812-886-0198, or go online at https://purdue.ca1.qualtrics.com/jfe/form/SV_8pnF8z1CwyglrGI by Monday, June 17.

July 9, 2019 Turf & Landscape Field Day

Daniel Turf Center, West Lafayette, IN

<https://turf.purdue.edu/field-day.html>

The Purdue Turf and Landscape Field Day is an annual one-day event with the objective of providing professional turf and landscape managers exposure and educational opportunities with the latest research and technical resources. The Field Day features research tours, afternoon workshops on current topics, and a tradeshow with over 40 exhibitors displaying equipment and turf and landscape products.

July 18, 2019 Meigs High Tunnel Field Day

Purdue Meigs Farm

Contact Lori Jolly-Brown, ljollybr@purdue.edu

The field day at Meigs Horticulture Farm, presented by the Horticulture Department and the Department of Entomology, will focus on high tunnel production of cucurbit crops. It will feature tours of conventional and hydroponic high tunnel cucumber and melon production. The use of insect-exclusion screens to control cucumber beetles and bacterial wilt will be on display in the conventional high tunnel systems. Vegetable grafting and future research in tomato systems will be presented. Attendees will also have an opportunity to discuss current challenges and future directions of research areas for high tunnel production systems.

August 1, 2019 Small Farm Ed Field Day

Daniel Turf Center, Purdue Student Farm

Contact Lori Jolly-Brown, ljollybr@purdue.edu

The Small Farm Education Field Day presented by Horticulture & Landscape Architecture will have classroom educational sessions at the Daniel Turf Center followed with lunch catered by Juniper Spoon at the Purdue Student Farm. Tours, workshops and vendors!

Rototiller vs. power harrow demonstration

High tunnel tomato and pepper production

Solar dryers for post-harvest processing of fruits, vegetables

Wash pack demonstration

Food safety plans and certification process for gardeners

Dynamic enterprise budgets

Scheduling crops in high tunnels

Cover crop choices

Soil restoration in urban farms

September 5, 2019 Hydroponics & Greenhouse workshop

Purdue University, Deans auditorium, HLA greenhouse

Contact Lori Jolly-Brown, ljollybr@purdue.edu

Participants will learn about optimal conditions for growing hydroponic lettuce, including nutrient recipes, production systems, artificial lighting practices and optimal temperatures for lettuce. Workshop attendees will also have the opportunity to tour the department's greenhouse and hydroponic facilities where several hands-on activities will take place. Krishna Nemali, professor of controlled environment agriculture, will lead the workshop. Nemali's research centers on enhancing sustainable growing practices in controlled environments, like greenhouse and indoor vertical farms.

October 17, 2019 Indiana Flower Growers association conference

Purdue University, Daniel Turf Center

Contact Lori Jolly-Brown, ljollybr@purdue.edu

Horticulturists and greenhouse operators will have an opportunity to network with industry experts and Purdue Extension specialists. Educational sessions to include technology and automation, electrical conductivity sensors, marketplace opportunities, greenhouse production, worker production

standards, as well as networking with other flower growers across the state.

February 11-13, 2020 Indiana Horticultural Congress

Indianapolis Marriott East Hotel:

Contact Lori Jolly-Brown, ljollybr@purdue.edu

[Home](#)

The Indiana Horticultural Congress, presented by Purdue University, is an educational meeting designed to meet the needs of fruit, vegetable, wine, organics, greenhouse, high tunnel, specialty crop growers and marketers in Indiana and surrounding states. Over 500 registrants and more than 70 vendors attend each year.

February 11-13, 2020 Indiana Green Expo

Indiana Convention Center, Indianapolis, IN

Indiana's largest, most comprehensive green industry event of the year!

Offering over 75 educational seminars plus a Spanish track, certification opportunities, in-depth workshops, numerous CEUs and CCHs to be earned, and a two-day trade show!

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