PURDUE UNIVERSITY | Extension - Entomology

Pest&Crop newsletter

Issue: 2023.23
August 25, 2023

Purdue Cooperative Extension Service and USDA-NIFA Extension IPM Grant

This work is supported in part by Extension Implementation Grant 2017-70006-27140/ IND011460G4-1013877 from the USDA National Institute of Food and Agriculture.

In This Issue

Bean Leaf Beetle; Some High Beetle Numbers

(Christian Krupke) & (John Obermeyer)

Though Japanese beetle numbers and their defoliation to soybean typically get lots of mid-season attention, their pressures seemed to be lower this year. In contrast, we've noticed bean leaf beetle coming on strong late this summer. Don't give up scouting yet!

Soybean fields throughout the state are beginning their annual color changes, deep green to golden yellow. Those soybean fields that remain green, especially those that are behind neighboring fields in development, should be monitored for bean leaf beetle. Remember that crops planted atypically early or late in a region, can sometimes be magnets for insect pests, depending on time of year. Bean leaf beetles scar the surface of pods, but only occasionally feed through the pod to the developing beans. The problems come later, during pod maturation. At that time, this scar often cracks as it dries out, leaving an entry hole for moisture and airborne plant pathogens (primarily fungi and yeasts) that may cause discolored, moldy, or shriveled beans.

Bean leaf beetle will relocate to later maturing fields for green leaves and pods. (*Photo Credit: John Obermeyer*)

It is important for pest managers to be able to predict whether economic damage will occur based on the numbers of beetles that are present now and the stage of pod development (i.e., green, yellow, yellow-brown, or brown pods). Once the pods turn yellow to yellow-brown, they become unattractive to hungry beetles and less susceptible to damage (this is also part of the reason behind the movement from drying beans to still-green fields). Control is normally **not** warranted when pods are yellow or brown.

Bean leaf beetle defoliation and pod scarring on R5 plants, well over treatment threshold. (*Photo Credit: John Obermeyer*)

Mature soybean pod split open to reveal the previous scarring that cracked, leading to a moldy bean. (*Photo Credit: John Obermeyer*)

For leaf feeding, 10% or greater defoliation in soybean growth stages R3-early R5 should be considered for treatment *if beetles are still active*

– remember that sprays must contact beetles to have efficacy. If they have departed the field, it's because it is no longer attractive and they will not likely return. For reference, this is a pretty high level of defoliation for this time in the year, and quite uncommon historically. For growth stages R6, scout bean fields for pod damage: randomly select 2 plants in each of 5 areas of the field and count the number of pods per plant and the number that show damage (i.e., 10 total plants). Calculate the percentage of damaged pods per plant for the field as a whole. Note whether the pods are green, beginning to turn yellow, or are yellow/brown. You should also determine the number of beetles per sweep using an insect sweep net. Take 5 sets of 20 sweeps in the field. Determine the number of bean leaf beetles per sweep.

Use the following table to determine when a treatment may be necessary

	No. of beetles per sweep in 30 inch (7 inch) row spacing		
Pod Injury Level	**Less than 4(3)**	**4(3) to 7(5)**	**More than 7(5)**
0 to 8%	Discontinue sampling	Sample again in 5 days	Cool (preventive) if pods still green
8 to 12%	Sample again in 5 days	Control if pods are still green	Control if pods are green to yellow
Over 12%	Control if pods are still green and beetles are present	Control unless pods are completely dry	Control unless pods are completely dry

Table modified from the University of Illinois.

If a treatment is deemed justified, be mindful of the insecticide's pre-harvest interval (**PHI**) which is stated on the label, this is the number of days before one can legally harvest those soybeans. It varies widely, with some recommended insecticides having a PHI of up to 60 days, which will likely be too long for some planned harvest windows. Recommended insecticides and their PHI's can be found HERE.

VIDEO: Consideration for Bean Leaf Beetle Feeding in Late-Maturing Soybean – (Christian Krupke and John Obermeyer)

Reduce The Fear Of Prussic Acid Poisoning

(Keith Johnson)

Hard to believe, especially after this week, but fall and cooler temperatures will be here in less than a month. Soon after that, a frost will occur. Members of the sorghum family have a compound called dhurrin that will release hydrogen cyanide, commonly known as prussic acid, when plants are stressed by drought or frost. Johnsongrass, a perennial sorghum, is commonly found in southern Indiana pastures. Historically, Johnsongrass was planted for forage purposes, but soon received the label of a prohibited noxious plant because of its ability to be where it wasn't desired because of seed shatter and rhizomes. Being a sorghum, Johnsongrass has the potential to produce hydrogen cyanide and cause livestock death when plants are stressed. Other desirable sorghums when stressed will produce hydrogen cyanide, too.

Johnsongrass, when damaged by severe drought or frost, has the potential to produce prussic acid (hydrogen cyanide). On the left is ungrazed forage in a paddock and on the right is a paddock that has been recently grazed. The tall plant on the left paddock is Johnsongrass. (*Photo Credit: Keith Johnson*)

Producers are encouraged to utilize sorghums before a frost occurs to reduce the possibility of prussic acid poisoning. Links below to a publication and video will discuss ways to reduce the fear of prussic acid poisoning.

In the near future, dhurrin-free sorghums will be available for seeding as a result of Purdue University work conducted by Dr. Mitch Tuinstra's research group, most notably Dr. Shelby Gruss. Unfortunately, Johnsongrass will remain to be concern even when dhurrin-free sorghums are available.

Read our publication AY-378-W Managing the Prussic Acid Hazard in Sorghum <https://www.extension.purdue.edu/extmedia/AY/AY-378-W.pdf>

Tar Spot And Southern Corn Rust Update In Indiana

(Darcy Telenko)

Southern corn rust has been confirmed in two counties (Knox and Daviess) this week both at low levels in Indiana (Figure 1). While tar spot continues to be documented across the state (Figures 2). I suggest if you have not gotten out and looked for these diseases now is the time. Even if your corn is approaching black layer it will be important to document tar spot in your fields for the future disease management decisions.

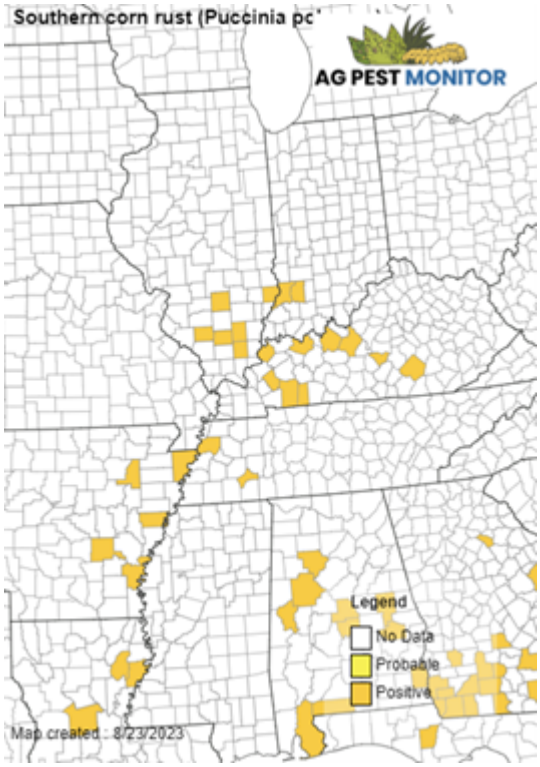

Figure 1. August 23, 2023 map of southern rust (*Puccinia polysora*).

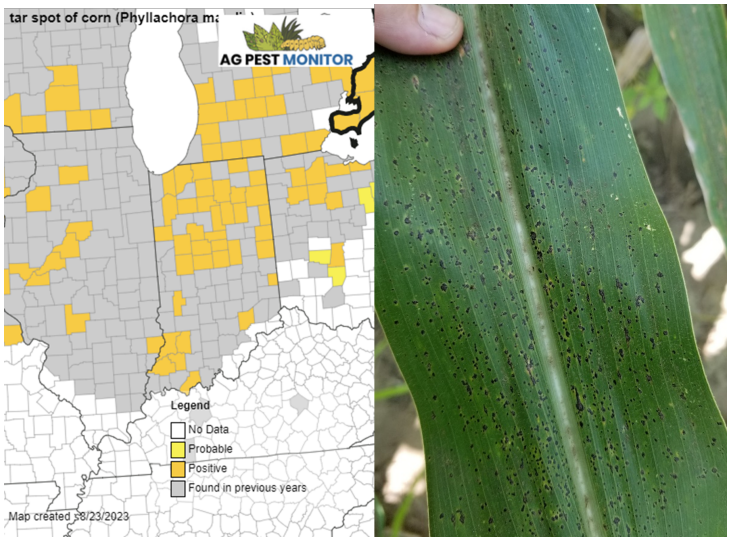

Figure 2. August 23, 2023 map of tar spot (*Phyllachora maydis*) and image of an infected leaf.

There are currently 35 counties with a positive confirmation of tar spot (Figure 2). Two counties with southern rust (Figure 1). As we are learning this season when we have had favorable environmental conditions there may be pockets of tar spot even in areas that have not seen the significant yield impacts previously. In the map all gray counties indicate that tar spot was found in the county in previous seasons.

I have been getting many questions on if a late season fungicide or 2nd fungicide application should be applied.

Here are my thoughts on what to consider to make that decision.

1. What growth stage is the corn? If at beginning dent (R5) or beyond I would not recommend an application.
2. What has been the history of tar spot in your field? How much disease do you see currently? Where is the disease in the canopy? Just lower leaves or has it moved up to the ear leaf?
3. When was a fungicide applied? If more than 3 weeks then the effective period for many of our fungicides has run out.
4. Has the environment be favorable for tar spot development – there's an app you can use to check your field risk.
5. If you do decide to make a fungicide application at this point in the season, leave check strips to determine if the fungicide gave you a return on your investment.

We are still documenting tar spot and southern rust as it is important to understand the disease distribution and severity across Indiana. It is extremely important to know if this disease is present in your fields for future risk assessments and to implement disease management tools if necessary. If you observe tar spot in a county that has not reported this season or would like to share what you have been seeing on your farm, then please send a sample to the Purdue Plant Pest Diagnostic Lab (PPDL) https://ag.purdue.edu/btny/ppdl/Pages/Submit-A-Sample.aspx or email me a photo of the leaf dtelenko@purdue.edu

Red Crown Rot Of Soybean: What To Do If You Suspect It Is In Your Field

(Darcy Telenko) & *(John Bonkowski)*

Red crown rot of soybean has become a new concern this season in Indiana after a few localized occurrences have been found this year. This disease is caused by the soilborne fungus, *Calonectria ilicicola*. At this point in the field season, we are on the hunt to determine how widespread the issue may be here in Indiana. Therefore, we need your help in documenting red crown rot and collecting samples.

What to look for: The disease may appear in patches in a field similar to our other soilborne diseases such as sudden death syndrome (SDS) and brown stem rot (Figure 1A). Early foliar symptoms may also mimic these diseases, which include chlorosis (yellowing) and necrosis of leaf tissue between leaf veins (Figure 1B). Therefore, it is important to take a few plant samples and check out the stem to verify the issue. Red crown rot will cause a red discoloration of the lower stem near the soil-line, and red, spherical perithecia may be visible, but are not always present (Figure 2). Rhizoctonia crown rot can also cause external brown to brown-red lesions on the stem. If you cut open the stem the central pith may have a gray discoloration (Figure 3), roots are rotted and the plants are easily pulled up from the soil.

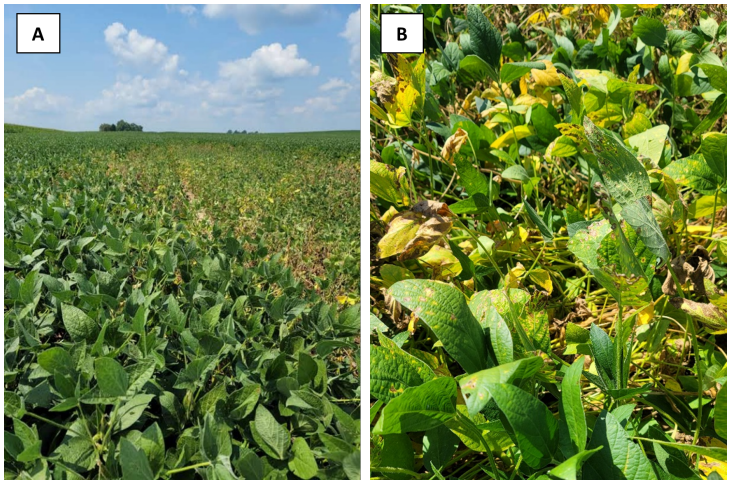

Figure 1. A: Discolored patch of soybean plants infected by red crown rot. B:

Chlorosis and necrosis symptoms in soybean leaves. (*Photo Credit: Darcy Telenko*)

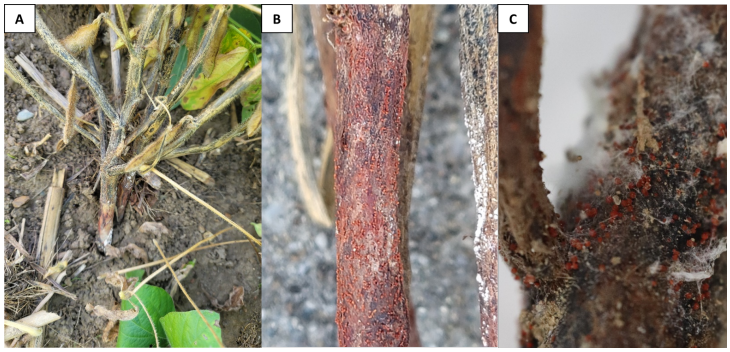

Figure 2. A: Red discoloration at the crown of the soybean plants in the field, B and C: red, spherical perithecia forming on crown and stem. (*Photo Credits: Darcy Telenko and John Bonkowski*)

Figure 3. Sample processing in the lab and gray discoloration that may be seen in pith. (*Photo Credit John Bonkowski*)

We are working with colleagues across the mid-west to track this disease. Samples of soybean infected with red crown rot will greatly assist us in determining the distribution of red crown rot and guide future research.

We greatly appreciate the samples that we have received this season and want to encourage you to get out and look at these suspect areas in your fields.

If you have (or think you have) red crown rot in your field, please collect several plants (between 4-8) showing the symptoms and send them to the Purdue Plant Pest Diagnostic Laboratory (PPDL). Please dig up, do not pull, the plants up that you intend on submitting.

Please ship early in the week. If you are sending samples from multiple locations, please label them and provide the date collected, variety, field zip code or county, and previous crop. Please also send photos via email of the affected areas in the field and closeups of the plants you intend on shipping.

Mail to: Plant and Pest Diagnostic Laboratory
Purdue University
915 Mitch Daniels Blvd
LSPS Rm 116
West Lafayette, Indiana 47907-2054

Sample Submission Form

Research funding from the Indiana Soybean Alliance is supporting sample processing, **therefore there will be no charge for soybean samples** submitted to the clinic.

Questions please contact Darcy Telenko (dtelenko@purdue.edu/764-496-5168) or PPDL (ppdl-samples@purdue.edu/765-494-7071)

The Heat And Humidity Is On, But Will It Last?

(Austin Pearson)

Have you ever heard of the song by Glenn Frey, “The Heat Is On”? No pun intended, but the heat is certainly on! Heat index values over 110F have made things sticky and oppressive across the state. As I drove into work on Thursday morning, the humidity was so high that I had to defrost my windows repeatedly. Fortunately, this heat and humidity will be short-lived as temperatures and humidity levels return to near normal by Saturday. Over the last 30 days (July 24 to August 23), temperatures have been normal, or more precisely, 0.2F above normal (Figure 1). The cool start to August and the current warm temperatures have balanced average temperatures out a bit for the last 30 days. Modified Growing Degree Days (MGDDs) have accumulated between 1600 and 2900 units across the state, which are near to slightly below normal (Figure 2).

Climate Division Data by State between Two Dates
From Midwestern Regional Climate Center

Indiana
7/24/2023 to 8/23/2023

	Temperature			Precipitation			
cd	temp	norm	dev	prcp	norm	dev	percent
1	71.9	71.9	0.0	6.08	3.76	2.33	162
2	71.4	71.4	-0.1	5.60	3.82	1.78	147
3	71.0	71.1	-0.1	4.45	3.69	0.76	121
4	73.3	73.2	0.1	4.48	4.03	0.45	111
5	72.5	72.7	-0.1	4.90	3.77	1.13	130
6	72.0	71.9	0.2	4.19	3.53	0.66	119
7	76.4	75.6	0.8	4.78	3.77	1.01	127
8	75.7	74.9	0.8	3.97	3.99	-0.02	99
9	74.7	74.2	0.5	4.09	3.87	0.22	106
State	73.3	73.1	0.2	4.79	3.81	0.98	126

Midwestern Regional Climate Center
MRCC Applied Climate System
Generated at:
Thu Aug 24 08:54:58 EDT 2023

Figure 1: Climate Division data by state, between July 24 and August 23, 2023, which includes observed temperature and precipitation, normal temperature and precipitation, temperature deviation from normal and percent of normal precipitation.

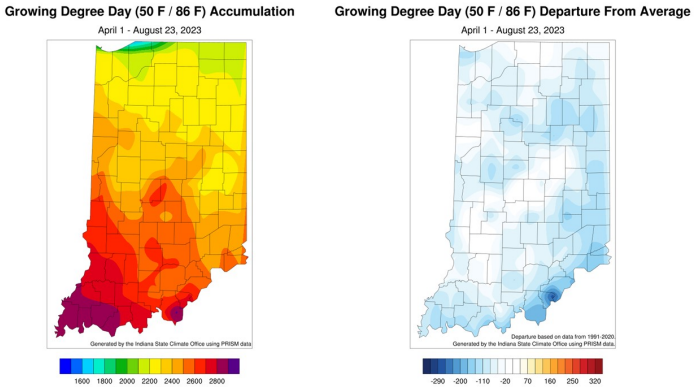

Figure 2: Total Accumulated Indiana Modified Growing Degree Days (MGDDs) April 1-August 23, 2023 (left) and Total Accumulated MGDDs represented as the departure from the 1991-2020 climatological normal (right).

The state average precipitation total was 4.79 inches (July 24 to August 23), which was 0.98 inches above normal, or 126 percent of normal. The uptick in precipitation has greened up the landscape, and drought conditions have dramatically improved across the state. Actually, I have had to mow my lawn a couple times a week for the last few weeks, and I’m kind of tired of mowing at this point. Usually, things begin to dry out in August, and weekly mowing suffices. The August 22 US Drought Monitor continued with a no-drought status but does have three areas

of abnormally dry (D0) conditions in the state (Figure 3). The heaviest precipitation fell in northwestern Indiana as local amounts reached up to 7 inches, which was between 150 and 175 percent of normal (Figure 4). Southwestern Indiana also had precipitation measuring between 5 and 6 inches.

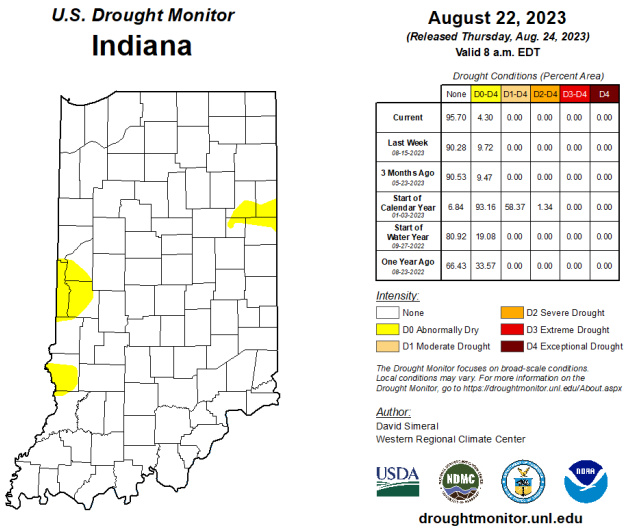

Figure 3: August 22, 2023, US Drought Monitor. The US Drought Monitor is released every Thursday morning by 8:30 AM.

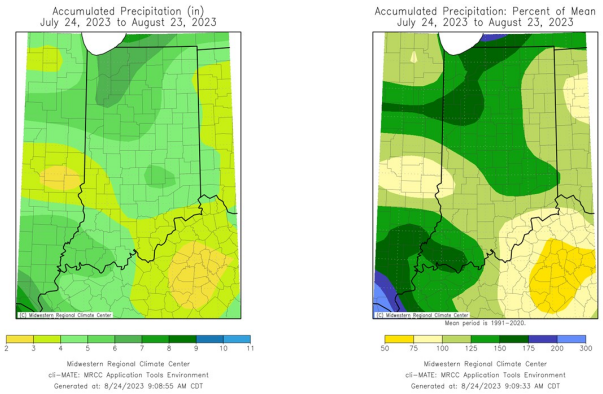

Figure 4: Observed precipitation (left) and percent of mean precipitation (right) for July 24-August 23, 2023.

Shifting to the climate outlooks, the Climate Prediction Center (CPC) has elevated chances of below-normal temperatures between August 29 and September 2 (Figure 5). Higher confidence in below-normal precipitation is also noted in the 6–10-day outlook. The 8-14-day outlook has elevated chances for above-normal temperatures and below-normal precipitation, so there is hope for slowed lawn growth over the coming weeks. Hooray to mowing the lawn less frequently, and this shift should help begin the dry-down process for corn and soybeans. The new seasonal outlooks do not have a firm grasp on what will happen with temperature and precipitation this fall, as the CPC has equal chances of above-normal and below-normal precipitation. Only time will tell!

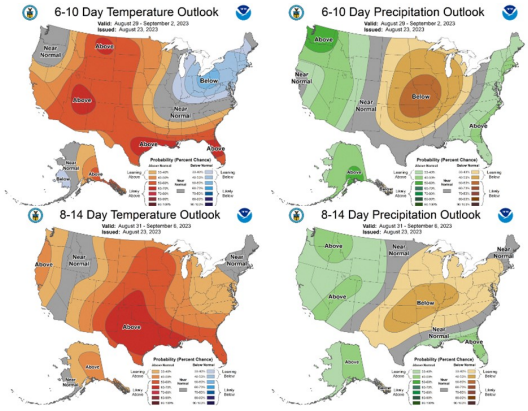

Figure 5: CPC 6-10 day temperature and precipitation outlooks for the United States, valid August 29-September 2, 2023 (top). CPC 8-14 day temperature and precipitation outlooks for the United States, valid August 31-September 6, 2023 (bottom).

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