PURDUE UNIVERSITY | Extension ENTOMOLOGY

Issue: 2020.18
July 31, 2020

Pest&Crop newsletter

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

- Rootworm Beetles Are Pollen Feeders…More Than Just Corn!
- 2020 Western Bean Cutworm Pheromone Trap Report
- Foliar Disease Update In Indiana Corn And Soybean
- Communicate Seeding Date Carefully – Someone Is Listening
- Indiana Climate And Weather Outlook

Rootworm Beetles Are Pollen Feeders…More Than Just Corn!

(Christian Krupke) & (John Obermeyer)

Much of the corn has pollinated throughout the state, but there are the late-planted fields that have yet to do so. Those are the fields that potentially act as a “trap crop” for various insect pests as they look for an excellent protein source…pollen. One particular insect, known by some producers as silk beetles, is the western corn rootworm beetle. In most years, this is the time for the peak number of beetles present in the state. In fact, for research trials we deliberately plant corn late the year before in an attempt to lure pollen-feeding female beetles into the crop so there will be plenty of eggs in second year corn. However, beetle numbers are much lower than they used to be several years ago. Because of this, some producers have let their guard down, only to later regret their decision to not protect their corn from larval damage. True, that lower beetle numbers present reduced risks to next year’s corn roots. Yet, understand, that there is still a risk! Left unchecked, the rootworm beetle can quickly and easily return to high populations in localized patches.

It goes without saying, fewer beetles will lay fewer eggs. Of course, the only way to know risk for next year, is to assess rootworm beetle populations NOW, on a field-by-field basis. Unlike some other pest insects, rootworm beetles do a lot of feeding as adults. Rootworm beetles, are pollen feeders, and while corn pollen may be a staple, it’s far from the only food source. So, whether in weedy soybean or wheat stubble fields, pollen from a multitude of weeds (e.g., foxtail, volunteer corn, ragweed, lambsquarters, pigweed, mustards, etc.) will draw them in to feed. These too are “trap crops” and will likely encourage significant egg laying for next year’s corn roots leading to unexpected lodging. In other words, another reason to keep weed control in mind. Especially if one wants to plant corn *without* Bt-rootworm traits. A quick look in pollen-heavy areas now, can save many frustrating hours picking lodged corn next year!

Happy scouting!

Western corn rootworm beetle feeding on corn pollen.

Western corn rootworm beetle feeding on giant ragweed pollen.

Western corn rootworm beetle feeding on dandelion pollen.

Western corn rootworm beetle feeding on pigweed pollen.

Western corn rootworm beetle feeding on lambsquarters pollen.

2020 Western Bean Cutworm Pheromone Trap Report

(John Obermeyer)

		WBC Trapped						
County	**Cooperator**	**Wk 1 6/18/20-6/24/20**	**Wk 2 6/25/20-7/1/20**	**Wk 3 7/2/20-7/8/20**	**Wk 4 7/9/20-7/15/20**	**Wk 5 7/16/20-7/22/20**	**Wk 6 7/23/20-7/29/20**	**Wk 7 7/30/20-8/5/20**
Adams	Roe/Mercer Landmark	0	0	0	0	0	0	
Allen	Anderson/NICK	0	0	2	1	5	5	
Allen	Gynn/Southwind Farms	0	0	0	2	5	0	
Allen	Kneubuhler/G&K Concepts	0	0	4	0	0	1	
Bartholomew	Bush/Pioneer Hybrids	0	1	2	0	0	0	
Boone	Emanuel/Boone Co. CES	2	1	1	0	0	0	
Clay	Mace/Ceres Solutions/Brazil	0	0	1	1	0		
Clay	Fritz/Ceres Solutions/Clay City	0	1	0	0	2		
Clinton	Emanuel/Boone Co. CES	0	3	0	1	0	1	
Dubois	Eck/Dubois Co. CES	0	0	0	0	0	1	
Elkhart	Kauffman/Crop Tech Inc.	0		2	8	62		
Fayette	Schelle/Falmouth Farm Supply Inc.	0	0	0	0	0	0	
Fountain	Mroczkiewicz/Syngenta	0	0	10	47	5	0	
Fulton	Jenkins/Ceres Solutions/Talma	0	0	0	95	17	0	
Hamilton	Campbell/Beck's Hybrids	0	0	0	0	0	0	
Hendricks	Nicholson/Nicholson Consulting	0	0	0	0	0		
Hendricks	Tucker/Bayer	1	0	0				
Howard	Shanks/Clinton Co. CES	0	0	0	0	1	0	
Jasper	Overstreet/Jasper Co. CES	0		15	327	1066	21	
Jasper	Ritter/Dairyland Seeds	3	7	25	45	99	2	
Jay	Boyer/Davis PAC	0	0	2	0	0	0	
Jay	Shrack/Ran-Del Agri Services	0	0	1	0	0	0	
Jennings	Bauerle/SEPAC	0	0	0	0	0	0	
Knox	Clinkenbeard/Ceres Solutions/Freelandville	0	0	0	0	0		
Lake	Kleine/Rose Acre Farms	0	0	1	3	5	3	
Lake	Moyer/Dekalb Hybrids/Shelby	0	8	8	21	171	20	
Lake	Moyer/Dekalb Hybrids/Scheider	0	8	17	86	266	54	
LaPorte	Rocke/Agri-Mgmt. Solutions	0	0	38	68	108	25	
Marshall	Harrell/Harrell Ag Services	0	0	0	26	5		
Miami	Early/Pioneer Hybrids	0	0	3	14	15	3	
Montgomery	Delp/Nicholson Consulting	0	0	0	0	0	0	
Newton	Moyer/Dekalb Hybrids/Lake Village	0	1	0	36	91	25	
Porter	Tragesser/PPAC	1	0	0	7	13	4	
Posey	Schmitz/Posey Co. CES	0		0	0	1	3	
Pulaski	Capouch/M&R Ag Services	1	4	4		74	64	
Pulaski	Leman/Ceres Solutions	0	0	7	49	33		
Putnam	Nicholson/Nicholson Consulting	0	0	0	0	1	0	
Randolph	Boyer/DPAC	0	0	3	0	0	1	
Rush	Schelle/Falmouth Farm Supply Inc.	2	4	0	0	0	0	
Shelby	Simpson/Simpson Farms	0	0	0	1			
Starke	Capouch/M&R Ag Services	1	0	9		28	13	
St. Joseph	Battles/Mishawaka	0	0	0	11	13	4	
St. Joseph	Carbiener/Breman	0	1	1	5	5	2	
St. Joseph	Deutscher/Helena Agri-Enterprises, Trap 1	0	0	0	8	25	28	
St. Joseph	Deutscher/Helena Agri-Enterprises, Trap 2	0	0	0	5	16	17	
Sullivan	Baxley/Ceres Solutions/New Lebanon	0	0	0	1	0		
Sullivan	McCullough/Ceres Solutions/Farmersburg	0	1	4	1	4		
Tippecanoe	Bower/Ceres Solutions	0	32	61	40	15		
Tippecanoe	Nagel/Ceres Solutions	0	0	0	0	0	0	
Tippecanoe	Obermeyer/Purdue Entomology	0	0	0	3	0	0	

		WBC Trapped						
County	Cooperator	Wk 1 6/18/20-6/24/20	Wk 2 6/25/20-7/1/20	Wk 3 7/2/20-7/8/20	Wk 4 7/9/20-7/15/20	Wk 5 7/16/20-7/22/20	Wk 6 7/23/20-7/29/20	Wk 7 7/30/20-8/5/20
Tippecanoe	Westerfeld/Bayer Research Farm	0	0	2	0	6	2	
Tipton	Campbell/Beck's Hybrids	0	0	0	0	0	0	
Vermillion	Lynch/Ceres Solutions/Clinton	0	0	0	0	0		
White	Foley/ConAgra	0	0	1	1	0	0	

* = Intensive Capture…this occurs when 9 or more moths are caught over a 2-night period

Foliar Disease Update In Indiana Corn And Soybean

(Darcy Telenko)

It is important to continue to scout for diseases in both corn and soybeans. Recent rain events have increased favorable environmental conditions for the development of foliar diseases in both crops. In our scouting rounds this week we are starting to see gray leaf spot, northern corn leaf blight, and Physoderma in corn (Figure 1), and frogeye leaf spot, downy mildew and Septoria brown spot in soybean (Figure 2). In addition, we continue to add counties with active tar spot and southern rust in Indiana. The most frequent question I have received is, "Should we make a fungicide application?" My response – What diseases are you finding in your field? What is your hybrid/variety susceptibility and field history? What growth stage? Are you irrigating?

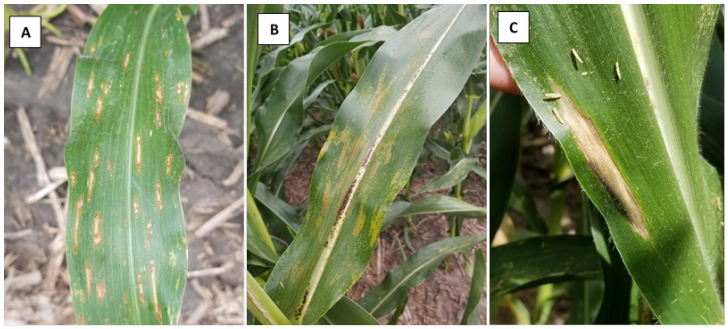


Figure 1. Foliar diseases in corn A. gray leaf spot, B. Physoderma brown spot, C. northern corn leaf blight. (*Photo Credit: Darcy Telenko*)

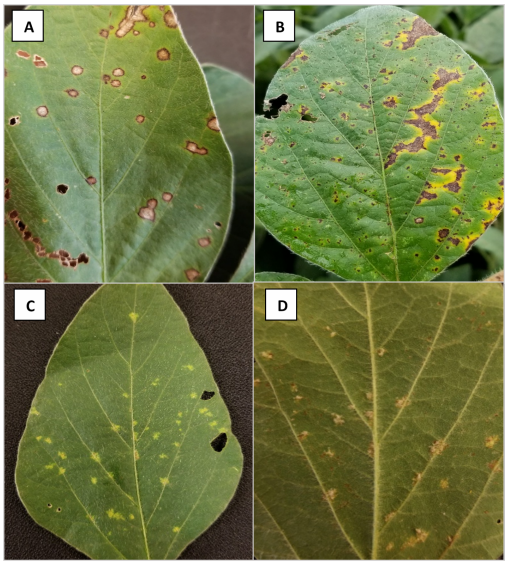


Figure 2. Foliar diseases in soybean A. frogeye leaf spot, B Septoria brown spot, C. downy mildew on upper leaf surface, D. downy mildew on lower leaf surface. (*Photo Credit: Darcy Telenko*)

A fungicide application can be effective at reducing disease and protecting yield, but there are a number of factors that need to consider: the field history/previous crop, the amount of disease present in the field, hybrid/variety susceptibility, weather conditions, the value of the crop, and cost of fungicide application.

Southern Rust: Southern rust was officially confirmed in our sentinel plots in Randolph County late last week, and since we have also confirmed in Whitley, Daviess, Jennings and Lawrence. (Figure 3). I suspect southern rust can be found across the state wherever spores settled after moving on weather systems from the south. **We need your help** – if you are out scouting field in the surrounding counties please let us know if you find any suspect samples please send to the Purdue Plant Pest Diagnostic Lab https://ag.purdue.edu/btny/ppdl/Pages/Submit-A-Sample.aspx

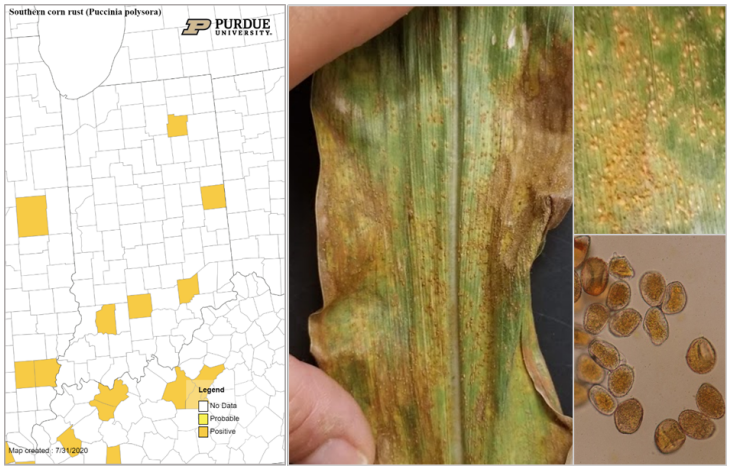


Figure 3. Distribution of southern rust in Indiana on July 30, 2020 <https://corn.ipmpipe.org/southerncornrust/> and an example of southern rust pustules on a corn leaf and diagnostic spores. (*Photo Credits: Darcy Telenko and John Bonkowski*)

Southern rust pustules generally tend to occur on the upper surface of the leaf, and produce chlorotic symptoms on the underside of the leaf (Figure 3). These pustules rupture the leaf surface and are orange to tan in color. They are circular to oval in shape. We are seeing a lot of common rust as well and both diseases could be present on a leaf.

There are a few characteristics to use to try to distinguish southern rust from common rust. Common rust will form pustules on both sides of the leaf. In addition, common rust pustules tend to be spread out across the leaf, and less densely clustered. Common rust pustules have a brick red to brown coloration and may be more elongated than southern rust pustules.

Check out the southern rust publication for more images of southern rust and other diseases that might mimic it. This publication also has good information on determining when a fungicide application will be beneficial. The publication is at following link: https://crop-protection-network.s3.amazonaws.com/publications/cpn-2009-southern-rust.pdf

Each year the rust spores (urediniospores) travel on air currents from tropical regions to fields in Indiana. Short periods of leaf wetness are required for infection by both rust fungi. Morning dews in Indiana can provide the six hours of moisture required for infection and disease development. Generally, southern rust prefers warmer temperatures — with infection occurring between 77-82°F. Southern rust is usually detected in Indiana late August and September and generally not something to worry about. Now that we have found it late-July it will be very important to keep eye out for southern rust in your field.

Favorable weather can cause the infection to repeat in a disease cycle as short as seven days, resulting in secondary infections and new pustules. Each pustule can produce thousands of spores that can infect corn leaves and produce additional pustules. Disease intensity can

reach epidemic levels very quickly as these cycles continue. The speed at which corn rust can reach damaging levels is why it is necessary to pay careful attention to the level and timing of initial disease infection in susceptible hybrids. Young leaves are more susceptible to rust infection than mature leaves. Our late-planted corn may be at greater risk for infection since the rust spores are now here in Indiana. Recent weather conditions continue to favor disease development therefore I cannot stress enough how important it will be to scout your corn fields and be on the lookout.

Tar Spot: Tar spot continues to be on everyone's mind. The first confirmations in Indiana for 2020 occurred in Porter and LaPorte Counties on July 6. Tar spot was identified at an extremely low incidence in this field (Figure 4), this past week we have begun to see an increase in tar spot severity as it has begun to move up in the canopy (Figure 3). In addition, we have confirmed tar spot in St. Joseph and Cass counties, and suspect a site in Jasper County. Tar spot had previously been found in 68 counties in Indiana, with the northern part of the state most at risk. These early tar spot detections are like finding a needle in the haystack and required intensive scouting, but as the disease progresses it will be easier to find as the number of spots increase and it moves up the canopy. We will continue to monitor and update as the season continues.

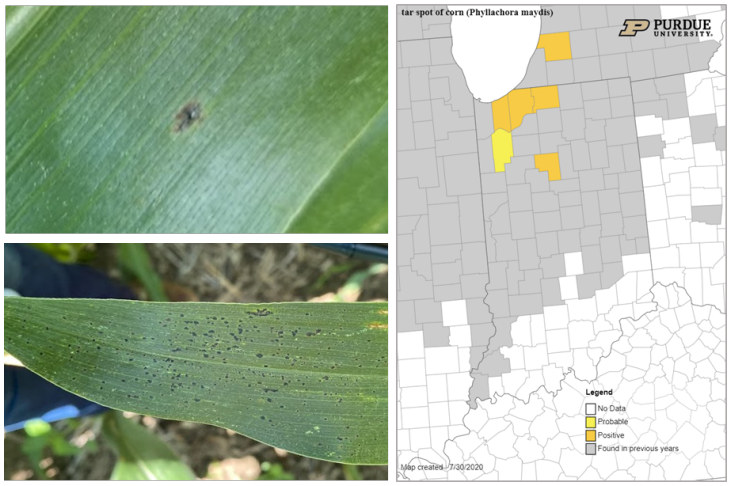


Figure 4. Tar spot lesion on corn in lower canopy. High resolution of the stroma formed on the leaf. (*Photo Credit: Darcy Telenko*)

We are working hard to try to understand this new disease to minimize losses, but have limited data on optimum fungicide timing based on disease threshold. The good news is that we found a number of fungicides are highly efficacious against tar spot. I would recommend picking a product with multiple modes of action. The national Corn Disease Working Group has developed a very useful fungicide efficacy table for corn diseases (see link below).

We will continue keeping a close eye on these diseases. I am interested in adding more locations in surrounding counties in northern Indiana; please contact me if you are interested in helping. If you suspect a field has tar spot please contact us and send a sample to the Purdue PPDL for confirmation.

Both gray leaf spot and northern corn leaf blight are also active in the lower canopy of corn across the state. It is going to be **extremely important to be out scouting**, especially if you are trying to make a decision on a fungicide application.

Gray leaf spot is also active in the lower to mid canopy at multiple sites across the state. The lesions are light tan in color and generally narrow and rectangular, and can be as long as 2 inches. As the lesions age they turn grey in color and are delimited by leaf veins (Fig. 1). This annual disease has become one of the most important foliar diseases in Indiana. Hybrid susceptibility and weather will have the greatest impact on the severity in a field. Fungicide options that are available for gray leaf spot would be a cost effective application in fields that have a history of disease and planted to susceptible hybrids in no-till or reduced-till system. As a reminder, fungicide applications add an additional cost to corn production. Therefore, economic factors and other disease issues need to be considered before deciding to apply a fungicide to manage gray leaf spot. Previous research has determined the best time to apply fungicides in preventing yield loss with the most economic return occurs when fungicides are applied in response to disease at tasseling (VT) through early silking (R1).

As a reminder the field history, disease activity, hybrid susceptibility, weather conditions, the value of corn and soybean, and cost of fungicide application are factors that should be considered in making a decision to apply a foliar fungicide. Several fungicides are available to help manage these foliar diseases with a recommended application occurring at late vegetative stages through R1 in corn, and R1- in soybean for white mold and R3 in soybean for frogeye leaf spot.

Resources:

Fungicide efficacy table for corn diseases:
https://crop-protection-network.s3.amazonaws.com/publications/cpn-2011-corn-fungicide-efficacy-for-control-of-corn-diseases.pdf

Fungicide efficacy table for soybean diseases:
https://crop-protection-network.s3.amazonaws.com/publications/fungicide-efficacy-for-control-of-soybean-foliar-diseases-filename-2019-03-25-121546.pdf

Purdue Field Crop Pathology Extension Website with current maps
https://extension.purdue.edu/fieldcroppathology/

Due to the need to monitor both southern rust and tar spot in Indiana, there will be **no charge for southern rust and tar spot samples submitted to the PPDL for diagnostic confirmation**. This service is made possible through research supported by the Indiana Corn Marketing Council. Please feel free to contact me (dtelenko@purdue.edu) or the PPDL (ppdl-samples@groups.purdue.edu) with any major disease issues you may have this season.

Communicate Seeding Date Carefully – Someone Is Listening

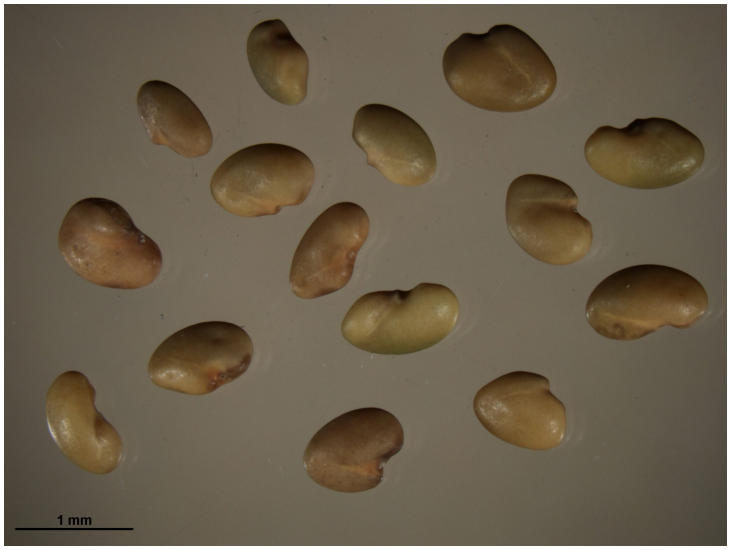
(Keith Johnson)

I was asked to come to a field in early April many years ago by a young producer. The producer and the seedsman that sold the alfalfa to the producer met me at the field. The cause of concern was that there was an expectation of green alfalfa growing after breaking winter dormancy in Mid-March. Instead, what was seen at my height of 5' 10" was light brown soil; not a trace of green from anything was seen. I dropped to my knees and got my eyes within 12 inches of the soil surface. What I saw was what had been an outstanding stand of alfalfa seedlings, at least 24 dead alfalfa seedlings no more than 1-inch in height, that were the same color of the soil. I asked the producer when he seeded the

field. He replied, “October 7”. The “Best Management Practice” would have been to have the alfalfa seeded by late August. Timely alfalfa seeding is always important to getting an excellent stand, and when seeded so late does not have time to develop into a winter hardy plant. This caused me to reflect on how many times I had heard discussions about fall seeding alfalfa. If this novice alfalfa producer was part of one of these discussions, he did exactly what he was told or heard; he seeded on a beautiful fall day. This in-field experience resulted in me correcting anyone that talks about seeding alfalfa in the fall. The right time is to have the seeding task accomplished by mid-August in northern Indiana and very early September along the Ohio River Valley. The fall season doesn’t begin until September 21.

The lesson from this event – Be specific when giving recommendations. Someone is listening!

P.S. for my beef cattle friends – Spring calving is after March 21, not in February or early March!



For a successful stand, alfalfa is best sown in the early spring or August. (*Photo Credit: Purdue University Crop Diagnostic Training and Research Center*)

Indiana Climate And Weather Outlook

(Beth Hall)

On July 16th, the national Climate Prediction Center released the climate outlooks for August (Figure 1) and the August-September-October (Figure 2) period. Both outlooks are indicating significant probability for above-normal temperatures. Precipitation is likely to be above normal for the southern two-thirds of Indiana in August, but there is little-to-no guidance for the 3-month, August-September-October period.

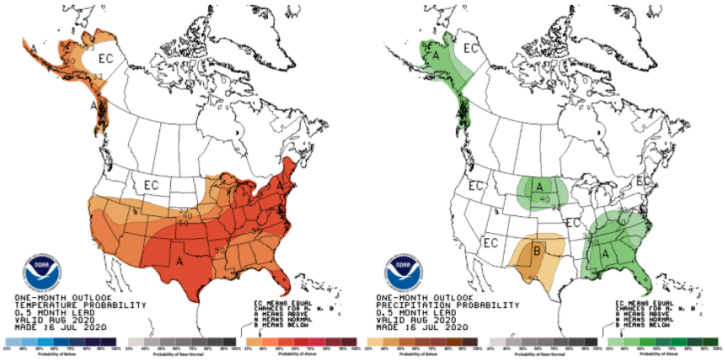


Figure 1. Temperature (left) and precipitation (right) probabilities for above- or below-normal conditions for August. Source: NOAA Climate Prediction Center.

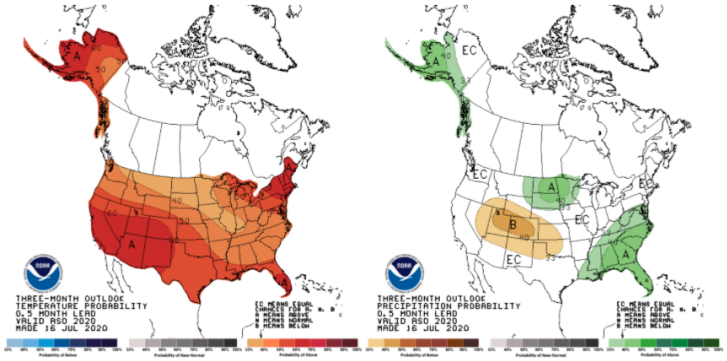


Figure 2. Temperature (left) and precipitation (right) probabilities for above- or below-normal conditions for the August-September-October period. Source: NOAA Climate Prediction Center

Abnormally dry conditions are starting to ease across the state, due to recent rainfall. However, evapotranspiration has still be relatively high due to the warm temperatures, so dry conditions remain spotty across the state. Fortunately, temperatures are likely to be below normal through August 7th (Figure 3), which may help lower evapotranspiration rates. Modified growing degree-day accumulations are very comparable to recent years in the northern part of the state, but are still lagging in the southern half (Figures 4 and 5).

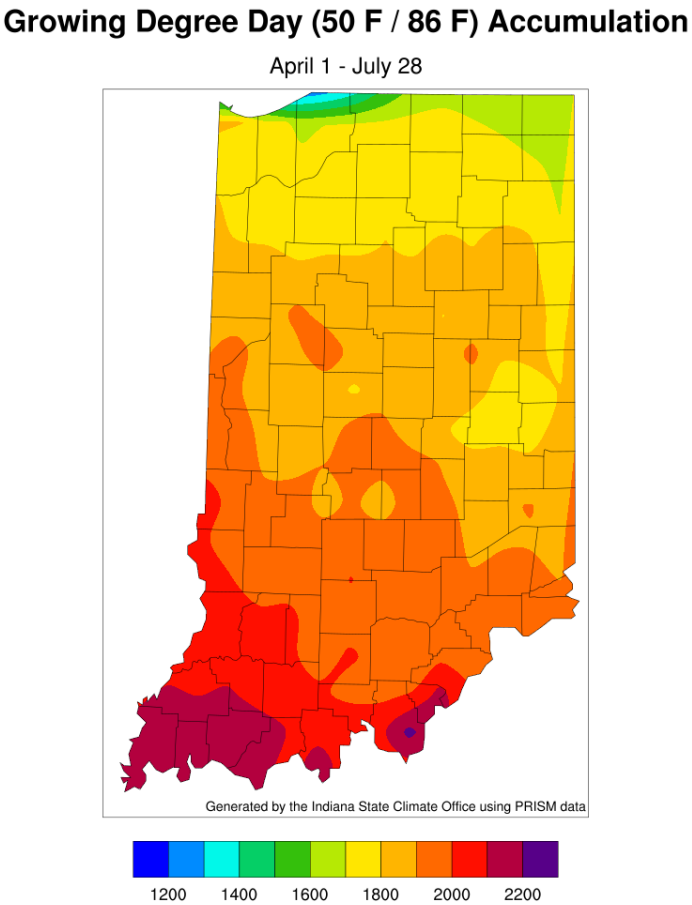


Figure 3. Modified accumulated growing degree-day units for April 1 – July 28, 2020.

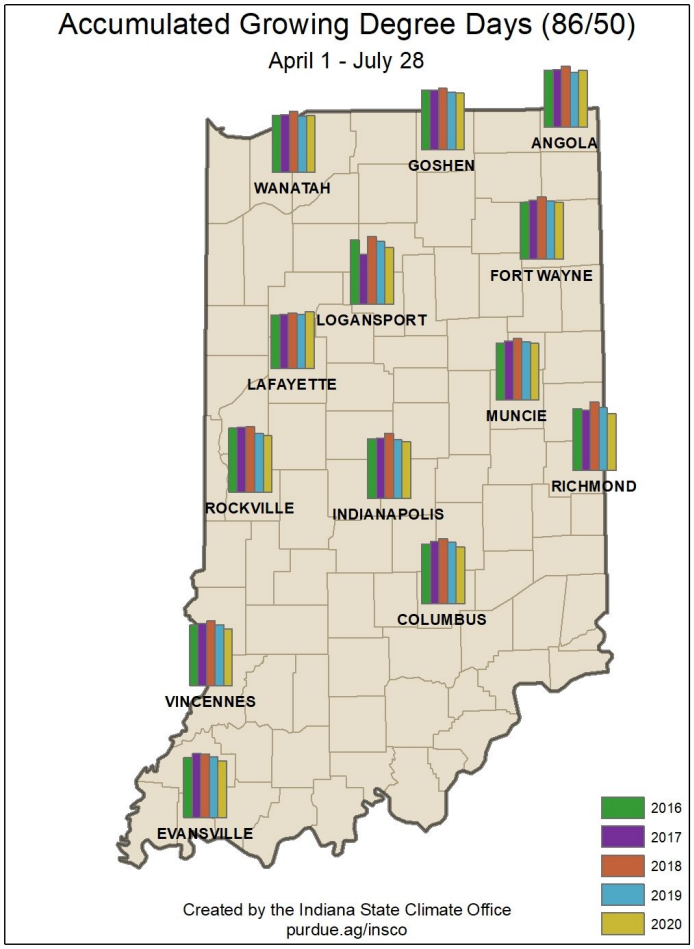


Figure 4. Comparison of accumulated modified growing degree days for April 1 through July 28 for 2016 through 2020.

Pest&Crop newsletter © Purdue University - extension.entm.purdue.edu/newsletters/pestandcrop
Editor: Tammy Luck | Department of Entomology, Purdue University, 901 W. State St., West Lafayette, IN 47907