PURDUE UNIVERSITY | Extension - Entomology

Pest&Crop newsletter

Issue: 2021.22
August 27, 2021

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

Fall Armyworm Problematic In Late Growing Crops

(Christian Krupke) & (John Obermeyer)

Reports of denuded forage crops, especially alfalfa, from large numbers of fall armyworm have been shared from throughout Kentucky and southern counties of Indiana and Illinois. This is not a total surprise – see *Pest&Crop* article from August 6, 2021 HERE concerning the large moth captures and early damage reports in Kentucky.

Female moths arriving from southern states will seek late-developing crops (i.e., young, tender foliage) in which to lay their eggs. Identifying the larva is the first step, but is pretty easy for this species. The head of the fall armyworm is dark colored with a predominant white/yellow, inverted Y-shaped suture on the front. This “Y” distinguishes the fall armyworm from other armyworm species. Although typically not a big concern in Indiana, this is one tough pest, and one of the key worldwide pests of a wide range of crops.

Most corn in southern counties has matured beyond any concern, but “trap” crops, e.g., replanted corn in drowned out areas or late-market sweet corn may be attractive. Unlike true armyworm (a corn/grass specialist), fall armyworm will feed on a wide range of broadleaves as well. It would be a stretch to say “they eat anything”, but not far off. By far, most damage reports are from hay/alfalfa mix fields. Initially, small larvae feed on the leaf surface, causing a “windowpane” effect, where the green tissue is removed and a transparent membrane remains. Fall armyworm will infest multiple species of grasses and broadleaf forages. Their insatiable appetite can denude alfalfa/hay crops rapidly, especially newly established stands. Like true armyworm, they “march” *en masse* to the next field. So if you see a field being destroyed, the crop next door is the one to watch.

Pest managers, especially in southern Indiana counties, should monitor crops that are still green for fall armyworm presence and their damage. Homeowners with their yards adjacent to damaged pastures, are seeing their lawns turn brown to the line as the “army” moves!

Fall armyworm completely stripping foliage from alfalfa and fescue. (*Photo Credit: B. Shelton*)

Marching worms finished with the hay, now the turf. (*Photo Credit: John Obermeyer*)

When considering controls, carefully read pesticide label restrictions by crop and rate. By the time fall armyworm are large and on the move, they will eat the most foliage but they will also soon be pupating. In other words, most damage being found is beyond treating! SCOUT NOW!!! Large fall armyworm larvae are very difficult to kill. Most insecticides will only “suppress” later-instar larvae, i.e., the ones that are “marching.” Use the highest labeled rate of insecticides labeled for that specific crop. Mixed plantings of hay crops exclude many popular insecticides…read the label!

One more thing: schedule insecticide applications **late** in the day if possible. This serves two purposes: it reduces the likelihood of sunlight/UV breakdown of insecticides, and maximizes the probability of

larvae encountering fresh, lethal residues – fall armyworm, like many caterpillars, are more active at night to avoid predation by birds and other natural enemies.

Sugarcane Aphid Reported In Southern Indiana Counties

(Larry Bledsoe), (Christian Krupke) & (John Obermeyer)

The sugarcane aphid (*Melanaphis sacchari),* a relatively new pest of grain sorghum, forage sorghums, sudangrass, sorghum-sudangrass hybrids and Johnson grass, first detected in Indiana in 2016, is making its presence known primarily in southcentral and southwestern counties. Indiana is at the northern edge of its current range, so it is currently not a widespread or serious pest, but it is worth paying attention to for growers in the southern part of the state.

This pest was first detected in the US on sorghum in 2013. This is a late season pest and now is the time to be actively scouting fields and pastures. This aphid can be separated from other aphids found in sorghum by its grey, tan, or pale yellow body contrasted with feet, antennae and cornicles (things that look like two tailpipes at the end of the body) that are all black. Like most aphids, this pest has the potential to produce clones and rapidly increase in abundance when conditions are favorable.

Crop injury is characterized by wilting and yellowing (with possible plant death) of stems and leaves due to the feeding by this piercing/sucking type of insect. Yields can be significantly reduced when aphid numbers are high. Additionally, the accumulation of aphid excrement called honeydew and the molds that grow on it can interfere with harvest activities.

Sugarcane aphid in southcentral Indiana sorghum. (*Photo Credit: B. Shelton*)

Close-up of sugarcane aphid, note the black tipped “feet,” antennae, and cornicles (“tail pipes”). (*Photo Credit: John Obermeyer*)

Fields should be scouted every three to four days starting in mid-August. Treatment thresholds are not well established, but data from Clemson University suggests treatment at “20% [of] plants infested with localized areas of heavy honeydew and established aphid colonies until boot [stage]. After boot and until dough stage, a threshold of 30% plants infested is to be considered.”

Products labeled for control are limited. Sefina (BASF) recently received EPA approval in sorghum for aphid control, it has been used in Southwest States, though we have no experience with this product and efficacy in the Midwest. Pyrethroids should be avoided as they will reduce natural enemies and cause the aphids to rebound quickly. Texas A&M suggests “An alternative to insecticide treatment may be grazing or early harvest.”

Further resources:

“Sugarcane Aphid and Potential Strategies for Control” (University of California, Davis)

“Grain Sorghum Insect Control” (Clemson)

“Forage Sorghum Insects” (Texas A&M)

Overgrazing During Dry Weather Has Long Term Consequences

(Keith Johnson)

This past week was a return to high summer temperature for all and lack of moisture for most in Indiana. Having livestock graze a pasture to the level that it looks like a golf course putting green has long term consequences that are not good for the wellbeing of the forages in the pasture. Meristems are where cell initiation, continued division, and elongation occurs. When close grazing happens, meristems cannot affectively produce what would be the next growth to graze. In time, less productive plants like Kentucky bluegrass and white Dutch white that can take close grazing because the meristems are at or slightly below the soil surface will increase and troublesome weeds may begin to appear and become dominant, too.

Here are some considerations to help stretch the forage supply that remains in a pasture, protect future plant productivity, and improve the wellbeing and productivity of livestock, too.

- Employ rotational stocking.

- Provide clean, cool water to reduce heat stress and maintain herd and flock health.
- Monitor the body condition of livestock as an indicator of nutritional status.
- Creep feed calves for near normal weaning weights.
- Early wean late winter- and spring-born calves to take pressure off both cows and pastures.
- Pregnancy check and market cull cows earlier than normal to reduce feed needs.
- Determine if poisonous plants are in overgrazed pastures and hay fields, and determine best control options.
- Inventory hay and other feed resources and determine whether future purchases will be needed.
- Analyze hay and silage for nutrient profiles to help determine what supplemental feeds will provide a balanced ration.
- Use alternative feeds to supplement and stretch forage supplies.
- Limit hay access time to stretch hay supplies.
- Limit feed a nutrient dense diet to stretch forage supplies.
- Graze corn residues and stockpiled forages if available in the fall to reduce harvested feed needs.

Listen carefully. Your forages may be crying out "Don't overgraze if you want to see us next year!".

If plants could cry out, they would yell "Stop" when overgrazing begins to occur. Note the visible manure in the upper center and the crushed aluminum can in the lower center of the photograph. If the pasture was properly grazed, the manure and aluminum can would not have been visible at the distance that the photograph was taken. (*Photo Credit: Keith Johnson*)

Stress During Grain Fill: A Harbinger of Stalk Health Problems

(Bob Nielsen)

Harbinger. [hahr-bin-jer] noun
Anything that foreshadows a future event; omen; sign: *Frost is a harbinger of winter.*
Collins English Dictionary – Complete & Unabridged 2012 Digital Edition. at Dictionary.com, LLC.
http://dictionary.reference.com/browse/harbinger (accessed: Sep 2019).

Serious crop stress during the grain filling period of corn increases the risk of **stalk rots and stalk lodging** (breakage) prior to grain harvest. Examples of such serious stresses are nitrogen deficiency, foliar diseases (e.g., gray leaf spot, northern corn leaf blight, tar spot), defoliation by hail, excessively wet soils due to heavy rains, excessively dry soils due to drought, excessive heat, and lengthy periods of cloudy conditions. The effects of dry weather during grain filling on corn stalk health are accentuated in fields where root development and depth were restricted earlier in the season or, obviously, in fields with sandy soils and minimal water-holding capacity. Early-season root restriction can occur in response to saturated soils and/or shallow layers of compacted soil.

What these crop stresses share in common is that they can significantly reduce **photosynthesis** and, thus, the resulting carbohydrates necessary for dry matter deposition into the kernels. During grain filling, the developing kernels are a significant **photosynthetic "sink"** for the products of photosynthesis and respiration. Corn plants prioritize the movement of these photosynthates to the kernels, even at the expense of not maintaining the cellular health of the stalk, leaves, and roots.

When **photosynthetic capacity** decreases significantly during grain fill as a result of **serious photosynthetic stress**, plants often respond by **remobilizing non-structural carbohydrates** from stalk and leaf tissues to supply the intense physiological demand by the developing grain on the ears. **Fields at high risk** for weakened stalks and stalk rot development are those whose plants have "set" fairly decent ears (e.g., ears with a lot of kernels.) In addition to **physically weakening the stalks** of plants, the reduction in stalk carbohydrate concentrations and/or the consequent lower cellular maintenance of root and stalk tissues **increases the susceptibility of the plant to root and stalk rot diseases**.

NOTE: Even if significant stalk rot does not develop after carbohydrate remobilization from lower stalk tissue of stressed plants, the structural loss of stalk integrity itself greatly increases the risk of stalk lodging prior to grain harvest.

Severely stressed fields should be scouted in late August through early September to look for compromised stalk strength or the development of severe stalk rots. In years where crop development is delayed (like 2019), stalk quality problems may not appear until mid- to late September. Recognize that hybrids can vary greatly for late-season stalk quality even if grown in the same field due to inherent differences for late-season plant health or resistance against carbohydrate remobilization when stressed during grain fill.

Stalk breakage itself is easy to spot when walking a field. However, compromised stalks may stand unnoticed until that October storm front passes through and brings them to their proverbial knees. The simplest techniques for assessing stalk integrity involve either pushing on stalks to see whether they will collapse or bending down and pinching the lower stalk internodes to see whether they collapse easily between your fingers.

TIP: What works pretty well for me is to walk a field perpendicular to the row direction. Firmly pushing the stalks out of my way as I cross from one row to the other usually identifies weak stalks.

If possible, fields at high risk for stalk lodging or, obviously, already beginning to lodge should be harvested earlier than fields with lower risks of stalk lodging. This will minimize the risk of significant mechanical harvest losses resulting from downed corn.

Another side-effect of late-season stress during grain fill is that plants may simply "shut down" and mature prematurely, eventually evidenced by premature formation of kernel black layer (i.e., the visual indication of physiological maturity). The consequences of premature kernel black

layer include not only lower grain yield, but also the likelihood of lower test weight grain.

Related Reading

Anderson, Meaghan and Alison Robertson. 2020. Scout Corn Fields for Stalk Rot. Iowa State Univ. Extension. https://crops.extension.iastate.edu/blog/alison-robertson-meaghan-anderson/scout-corn-fields-stalk-rot [accessed Aug 2021].

Butzen, Steve and Bill Dolezal. Managing Stalk Rots in Corn – Anthracnose, Gibberella and Diplodia. Crop Insights, DuPont Pioneer. https://www.pioneer.com/us/agronomy/managing_stalk_rot.html. [accessed Aug 2021].

Esker, Paul. 2018. Scouting for Stalk Rots in Corn. Penn. State Univ. Extension. http://extension.udel.edu/factsheets/stalk-rots-on-corn [accessed Aug 2021].

Freije, Anna, Kiersten Wise, and Bob Nielsen. 2016. Diseases of Corn: Stalk Rots. Purdue Univ. Extension Bulletin #BP-89-W. https://www.extension.purdue.edu/extmedia/BP/BP-89-W.pdf. [accessed Aug 2021].

Jackson, Tamra, Jennifer Rees, and Robert Harveson. Common Stalk Rot Diseases of Corn. Univ. of Nebraska Extension Pub. #EC1898. http://extensionpublications.unl.edu/assets/pdf/ec1898.pdf. [accessed Aug 2021].

Jardine, Doug. 2006. Stalk Rots of Corn and Sorghum. Kansas State Univ. Extension Pub. L-741. http://www.sunflower.k-state.edu/agronomy/corn/docs/Stalk%20rot%20of%20corn.pdf. [accessed Aug 2021].

Jardine, Doug and Ignacio Ciampitti. 2019. Common causes of late-season stalk lodging in corn. K-State Extension Agronomy eUpdate. https://eupdate.agronomy.ksu.edu/article_new/common-causes-of-late-season-stalk-lodging-in-corn-354 [accessed Aug 2021].

Jeschke, Mark. 2018. Common Stalk Rots in Corn. Pioneer / Corteva. http://extension.udel.edu/factsheets/stalk-rots-on-corn [accessed Aug 2021].

Kleczewski, Nathan. 2014. Stalk Rots on Corn. Univ. of Delaware Extension. http://extension.udel.edu/factsheets/stalk-rots-on-corn. [accessed Aug 2021].

MacKellar, Bruce. 2018. Tar spot is impacting corn yields and causing stalk lodging during harvest. Field Crop News, Michigan State Univ Extension. https://www.canr.msu.edu/news/tar-spot-impacting-corn-yields-and-causing-stalk-lodging-during-harvest [accessed Aug 2021].

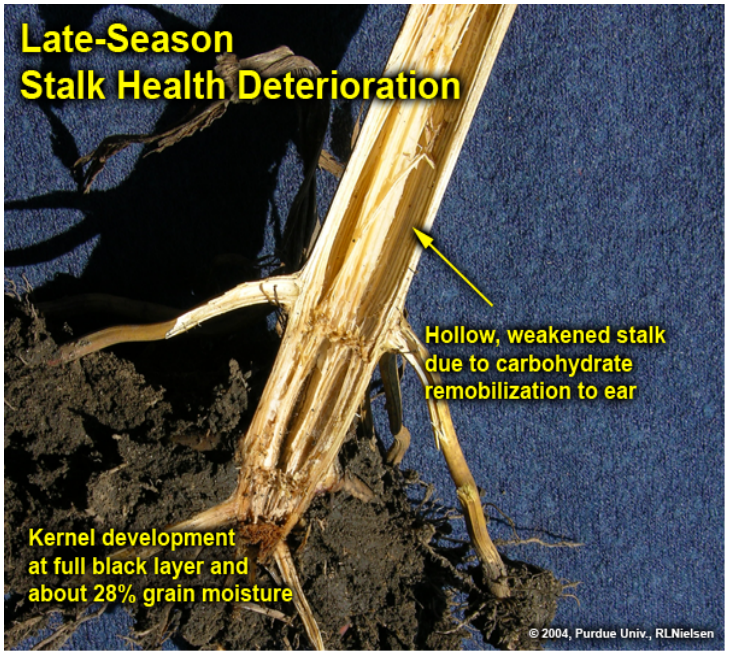
Nielsen, R.L. (Bob) 2018. Effects of Stress During Grain Filling in Corn. Corny News Network, Purdue Univ. http://www.kingcorn.org/news/timeless/GrainFillStress.html [accessed Aug 2021].

Nielsen, R.L. (Bob). 2020. Kernel Set Scuttlebutt. Corny News Network, Purdue Univ. http://www.kingcorn.org/news/timeless/KernelSet.html [accessed Aug 2021].

Nielsen, R.L. (Bob). 2021. Grain Fill Stages in Corn. Corny News Network, Purdue Univ. http://www.kingcorn.org/news/timeless/GrainFill.html [accessed Aug 2021].

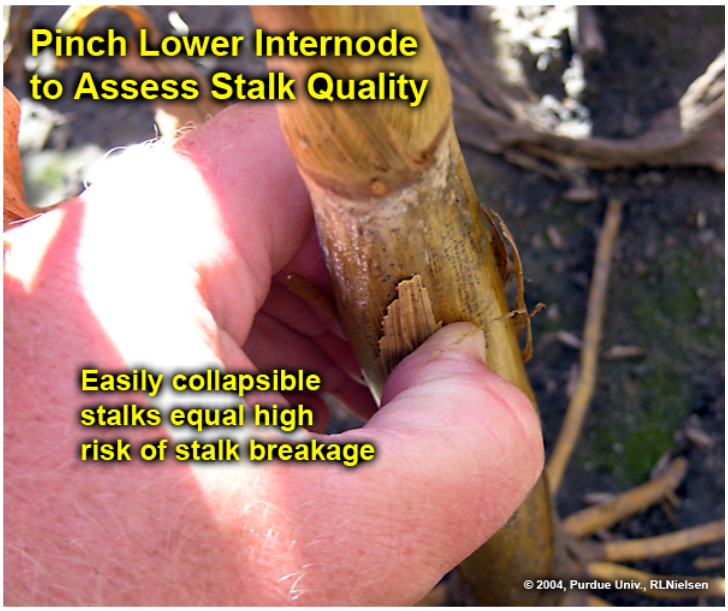
Sweets, Laura. 2013. Corn Stalk Rots. Integrated Pest & Crop Management, Univ. of Missouri. https://ipm.missouri.edu/IPCM/2013/8/Corn-Stalk-Rots/. [accessed Aug 2021].

Telenko, Darcy. 2019. Ear and Stalk Rots: How to Identify and Make Assessments for Harvest and Future Disease Management Decisions. Pest & Crop Newsletter, Purdue Univ. Extension. https://extension.entm.purdue.edu/newsletters/pestandcrop/article/ear-and-stalk-rots-how-to-identify-and-make-assessments-for-harvest-and-future-disease-management-decisions/ [accessed Aug 2021].



Hallowed out stalk.

Closer look at hallowed out stalk.



Pinch lower stalk internode.

Lodged plant caused by pushing hard.

Lodged plant caused by pushing hard.

Premature senescene of corn plants in response to severe drought stress.

Upcoming Cannabinoid Hemp Field Day

(Marguerite Bolt, mbolt@purdue.edu)

Individuals interested in learning more about the potential challenges and opportunities of growing cannabinoid hemp are invited to a field day at Meigs Farm, part of the Throckmorton Purdue Agricultural Center, 9101 S. 100 E, on September 16th from 1:00-4:30 p.m.


Cannabinoid hemp.

This activity was funded by Purdue University as part of AgSEED Crossroads funding to support Indiana's Agriculture and Rural Development. Two different AgSEED projects will be highlighted,

"Getting it right inside: Developing a propagation standard for Indiana hemp Growers" and "Laying the groundwork for developing and measuring the impact of hemp IPM in Indiana".

Field day topics include:

- Hemp propagation
- Variety trial
- Pathogens of hemp
- Insect and mite pests of hemp
- Cover crops and hemp
- Drone and aerial imaging

The field day will run from 1:00-4:30 p.m. Check in and packet pick up begins at 12:45 p.m.

Cost is $30, payable before or at the event. Make checks payable to Purdue DTC, 915 W. State St., West Lafayette, IN 47907. For more information or to sign up, go to https://am.ticketmaster.com/purdue/fieldday

Drought Intensifying Across Central Indiana

(Beth Hall)

A lack of abundant precipitation over the past month has caused abnormally dry conditions to expand across Indiana this week with several counties in central Indiana intensifying to the *Moderate Drought* stage of the US Drought Monitor (Figure 1). Some intense weather systems passed through the state this week (Figure 2), however, this was not enough to fully alleviate the deficit that has been building up over the past 30 days. Figure 3 shows the percent of the climatological normal amount of precipitation that was received over the recent 30-day period. Note areas in red that indicate the precipitation received this year for that period was similar to the 10th to 25th percentile of the driest amounts recorded from 1991 through 2020 for that same period of time. In other words, that is very dry. According to the National Oceanic and Atmospheric Administration, east-central Indiana would need three to six inches of rain to bring the Palmer Drought Index back to within normal ranges; most of the rest of Indiana would need up to three inches (https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/addpcp.gif).

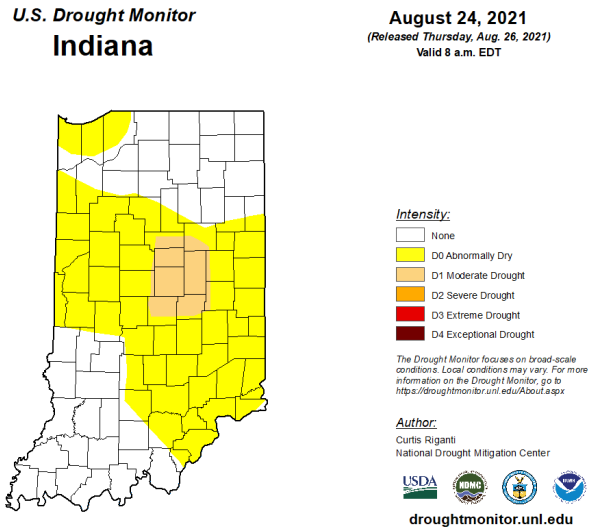


Figure 1. US Drought Monitor conditions for Indiana as of 24 August 2021.

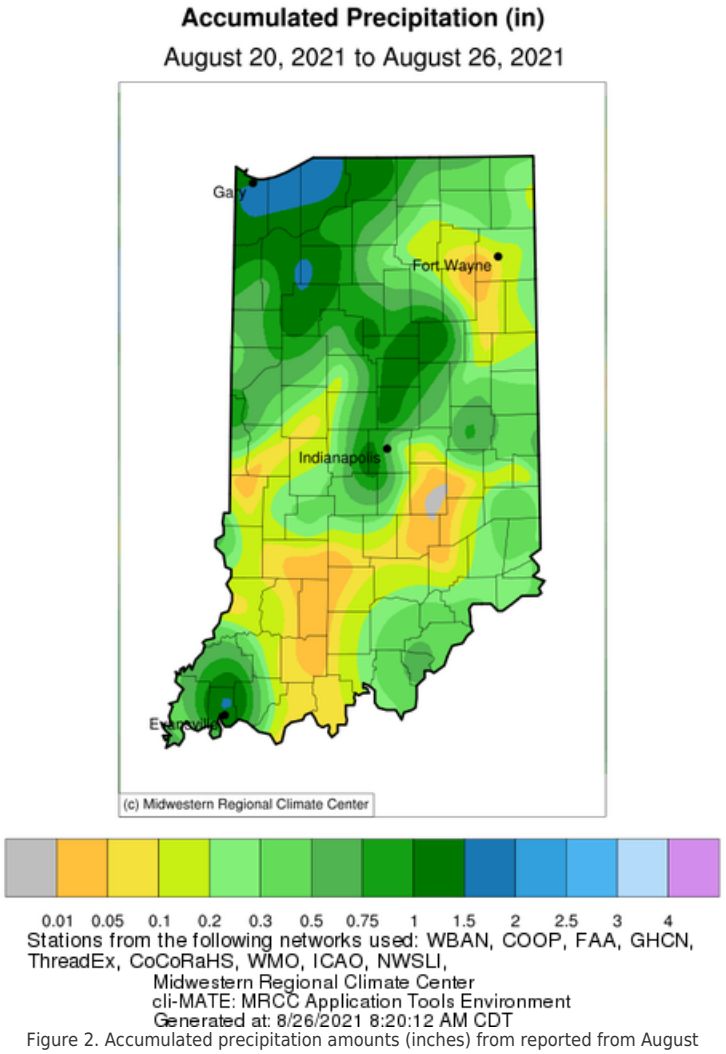


Figure 2. Accumulated precipitation amounts (inches) from reported from August 20-26, 2021.

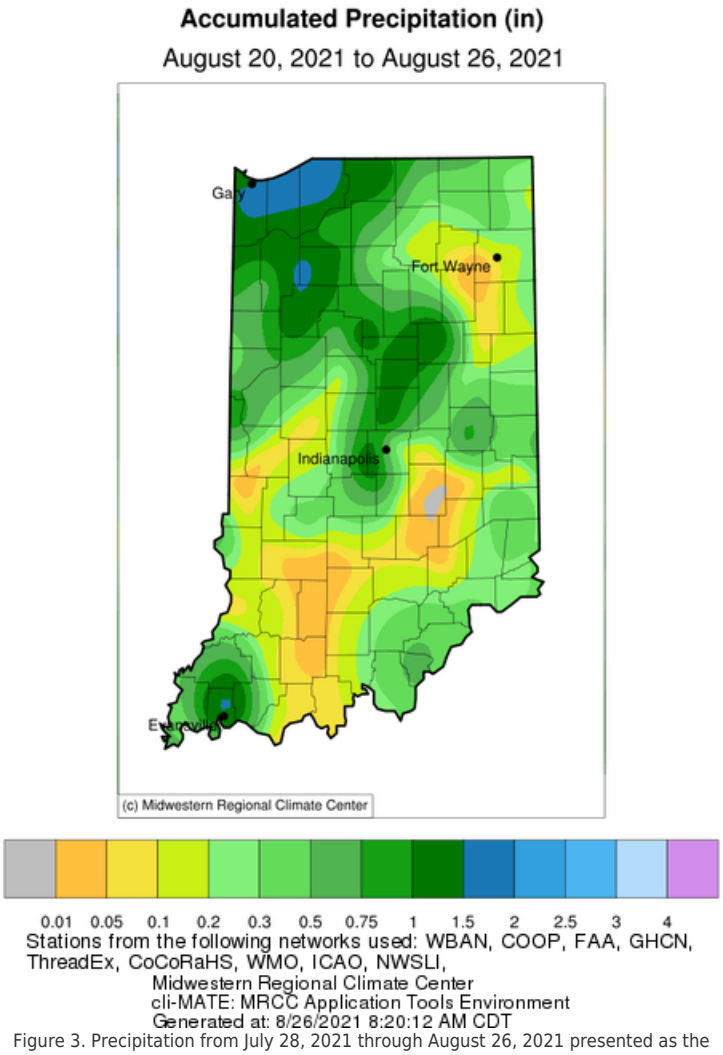


Figure 3. Precipitation from July 28, 2021 through August 26, 2021 presented as the percentage of the 1991-2020 climatological normal period.

The warm temperatures, along with very high amounts of water vapor (humidity), have made this week uncomfortably muggy. There was hope that this mugginess would be behind us, but weather patterns and high tropical storm activity has kept above-average humidity lingering. Accumulated growing degree days now range from about 2300 units in northern Indiana to a little over 2900 units in southern Indiana (Figure 4). Figures 5 and 6 show how these degree-day accumulations compare to climatology and recent years, respectively.

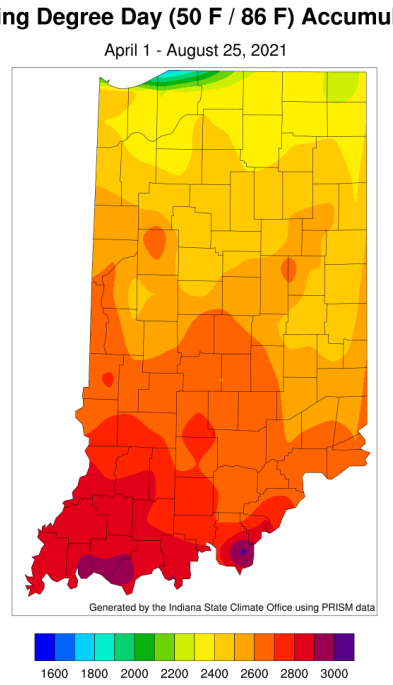


Figure 4. Accumulated modified growing degree days for April 1 through August 25, 2021.

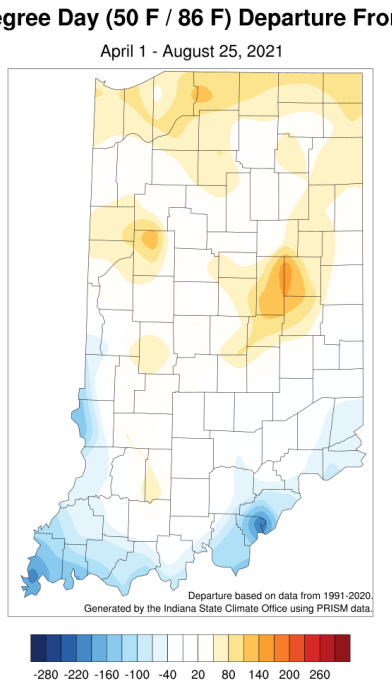


Figure 5. Accumulated modified growing degree day departure from the 1991-2020 climatological average for April 1 through August 25, 2021.

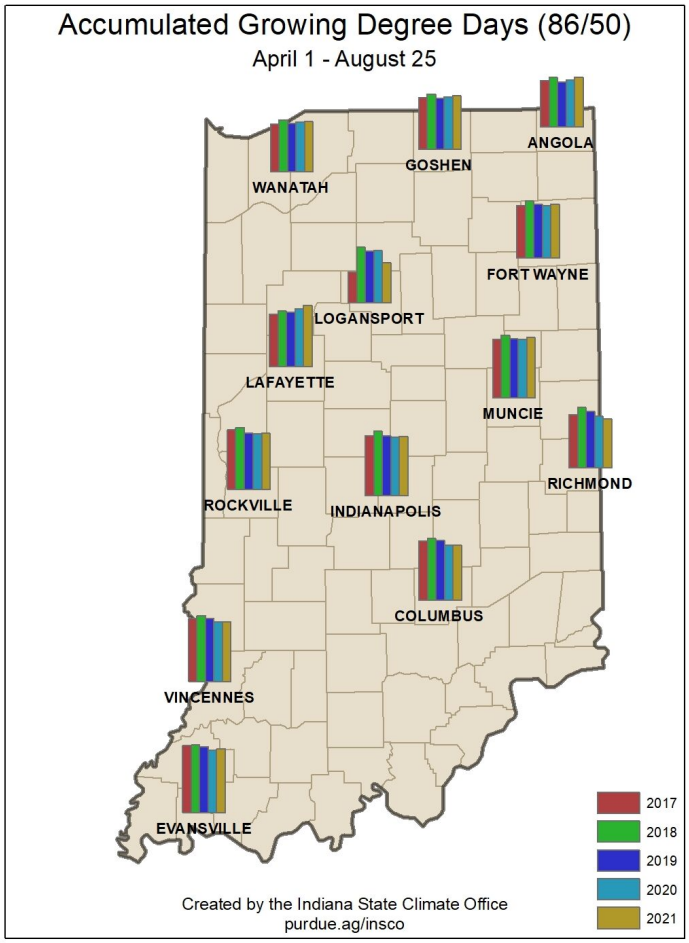


Figure 6. Comparison of 2021 modified growing degree day accumulations from April 1 – August 25 to the past four years.

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