

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

- [Western Corn Rootworm Beetle Numbers Variable, Assess Your Risk For Next Year's Corn](#)
- [2022 Western Bean Cutworm Pheromone Trap Report](#)
- [Prepare To Stockpile Forage For Late Fall And Early Winter Grazing](#)
- [Flood Or Ponding Damage To Corn Late In The Growing Season](#)
- [Purdue Crop Chat Episode 38, Nutrient Deficiencies Hitting Indiana Crops](#)
- [Drought Improving ... For Now](#)

Western Corn Rootworm Beetle Numbers Variable, Assess Your Risk For Next Year's Corn

(Christian Krupke) & (John Obermeyer)

We've received multiple reports of impressive rootworm beetle populations in cornfields. Most of these fields were continuous corn without rootworm larval protection. These fields seem to be the exception, but the increasing trend is troublesome. This article is a reminder that a pest is still alive and well.



If corn is being going into this field next year, rootworm protection is needed!
(Photo Credit: John Obermeyer)

For years, high adoption of highly effective Bt hybrids for rootworm control has likely contributed to a decline in rootworm populations. Overall, Indiana producers have managed this pest through a

combination of crop rotation and/or use of Bt-rootworm hybrids. This approach, over many years, drastically reduced rootworm populations compared to 20 years ago. More recently, as state-wide rootworm risks to corn damage declined, producers have used less rootworm protection on their corn. This was a combination of those wanting to save money and take a chance with no protection or those assessing their risks on a field-by-field basis with scouting and appropriate management tactics (IPM). Now is the time one can make assessments for next year's corn.



Absence of rootworm beetles indicates risk to next year's corn is low! (Photo Credit: John Obermeyer)

Consider that fewer beetles will lay fewer eggs for next year. Now is the time when beetle populations can be assessed in pollinating corn and soybean for next year's rootworm risk where corn will be planted. Pollen from a multitude of weeds (e.g., foxtails, volunteer corn, ragweeds, lambsquarters, pigweeds, etc) will draw them in to feed, potentially leading to unexpected lodging. Investigations in these areas during the next few weeks will help make informed control decisions for next year.



Weeds in this soybean field, especially when pollinating, attract western corn rootworm beetles. (Photo Credit: John Obermeyer)

There are "formal" sampling methods that have been devised, e.g., plant counts, yellow-sticky cards, sweep net, but nothing replaces "boots in the field." In cornfields, enter beyond the end rows and observe for beetles in/around the corn ear silks or surrounding leaves. As you do this in several locations, are you seeing beetles or their feeding damage to silks? In soybean, after most of the morning dew has burned off, look for the beetles near the top of the foliage, perhaps even feeding on the leaves. If there are weed patches, inspect them for beetles feeding on the pollen.

To correctly use any control strategy is to use it when and where it is needed. Knowing your rootworm larval risk for next year, by assessing beetles now, is the most efficacious and cost-effective approach for managing this pest. Too, by using control strategies (e.g., Bt-RW) only when warranted, we will extend the life of its availability for years to come.

Happy scouting!

2022 Western Bean Cutworm Pheromone Trap Report

(John Obermeyer)

County	Cooperator	WBC Trapped						
		Wk 1 6/22/22- 6/29/22	Wk 2 6/29/22- 7/6/22	Wk 3 7/6/22- 7/13/22	Wk 4 7/14/22- 7/20/22	Wk 5 7/20/22- 7/27/22	Wk 6 7/28/22- 8/3/22	Wk 7 8/3/22
Adams	Roe/Mercer Landmark, Decatur	0	0	0	0	0	0	
Allen	Anderson/Blue River Organics, Churubusco	0	0	0	0	1	0	
Allen	Cyrus/Ceres Solutions, Ft. Wayne	0	0	0	1	5	0	
Allen	Kneubuhler/GSA Coop, Huron	0	0	0	0	1	0	
Bartholomew	Bush/Pioneer Hybrids, Columbus	0	0	0	0	0	0	
Clay	Mace/Ceres Solutions, Brazil	0	0	0	0	0	0	
Clay	Fritz/Ceres Solutions, Clay City	0	0	0	0	0	0	
Clinton	Emerson, Frankfort	0	0	0	0	0	0	
Daviess	Breckenridge/Ceres Co, CES, Montgomery	0	0	0	0	0	0	
Dubois	Eck/Dubois Co. CES, Jasper	0	0	0	0	0	0	
Elkhart	Kaufmann/Crop Tech Inc., Millersburg	0	0	2	26	68	13	
Fayette	Schelle/Falmouth Farm Supply Inc.,	0	0	0	0	0	0	
Fountain	Farmers Cooperative, Elkhart	0	0	0	0	0	0	
Hamilton	Mroczkiewicz/Syngenta, Attica	3	0	0	1	1	0	
Hancock	Campbell/Berk's Hybrids	0	0	0	0	0	0	
Hendricks	Gordon/Koppert/Biologics, Greenfield	0	0	0	1	0	0	
Hendricks	Nicholson/Nicholson Consulting, Danville	0	0	0	0	0	0	
Howard	Tucker/Bayer, Brownsburg	0	0	0	0	0	0	
Howard	Shandor/Holman, Kokomo	0	0	0	0	0	0	
Jasper	Oversstreet/Jasper Co. CES, Wheatfield	0	0	2	21	211	92	
Jasper	Ritter/Dairyland Seeds, McCoyburg	1	1	3	35	5	0	
Jay	Boyer/Davis PAC, Powers	0	0	0	0	0	0	
Jay	Shrack/Ross Del Co-Alliance, Parker City	0	0	0	0	2	0	
Jennings	Bauer/SEPA, Logansville	1	0	0	0	0	0	
Knox	Clinkenbeard/Ceres Solutions, Edwardsport	0	0	0	0	0	0	
Knox	Edwards/Ceres Solutions, Fritchton	0	0	0	0	0	0	
Kosciusko	Jenkins/Ceres Solutions/Mentone	0	2	6	93	48	30	
Lake	Klein/Rose Acme Farms, Cedar Lake	0	1	1	0	6	2	
Lake	Moyer/Dekalb Hybrids, Plymouth	0	0	0	0	6	1	
Lake	Moyer/Dekalb Hybrids/Scheider	0	0	0	25	21	9	
LaPorte	Deutscher/Helen Agri, Hudson Lake	0	0	0	69	135	96	
LaPorte	Rocke/Agr-Mgmt. Solutions, Wanatah	0	1	18	108	49	0	
Marshall	Harrell/Harrell Ag Services, Plymouth	1	1	12	37	15	3	
Marion	Bailey/Ceres Hybrids, Marion	0	1	15	79	45	13	
Montgomery	Depp/Nicholson Consulting, Waynetown	0	0	0	0	0	0	
Newton	Moyer/Dekalb Hybrids, Lake Village	1	1	7	46	35	10	
Perry	Lorenz/Lorenz Farms, Rome 1	0	0	0	0	0	0	
Perry	Lorenz/Lorenz Farms, Rome 2	0	0	0	0	0	0	
Porter	Trappes/Patterson, Wabash	0	4	0	3	0	0	
Posey	Schmitz/Posey Co. CES, Blairsburg	0	0	1	16	32	26	
Pulaski	Capouch/M&R Ag Services, Medaryville	0	0	0	48			
Pulaski	Leman/Ceres Solutions, Francesville	0	0	0				

Putnam	Nicholson/Nicholson Consulting, Greencastle	0	0	1	0	0	
Randolph	Boyer/DPAC, Farmland	0	0	0	0	0	
Rush	Schelle/Falmouth Farm Supply Inc., Carthage	1	0	0	0	0	2
Scott	Tom Springstun/Scott Co. CES, Scottsburg	0	0	0	0	0	0
Shelby	Fisher/Shelby County Coop, Shelbyville	0	0	0	0	0	0
St. Joseph	Carbierne, Breman	0	1	0	21	79	30
St. Joseph	Douglas/Helen Ag Services, New Carlisle	0	0	0	12	18	19
Starke	Capouch Chaffins/M&R Ag Services, Monterey	0	0	8	19	5	4
Starke	Capouch Chaffins/M&R Ag Services, San Pierre	0	0	9	27	9	2
Sullivan	McCullough/Ceres Solutions, Farmersburg	0	0	0	0	0	0
Sullivan	McCullough/Ceres Solutions-Dugger	0	0	2	5	18	3
Tippecanoe	Bower/Ceres Solutions, Lafayette	0	0	0	0	0	0
Tippecanoe	Nagel/Ceres Solutions, W. Lafayette	0	0	0	0	1	0
Tippecanoe	Westcott/Helen Research, W. Lafayette	0	0	0	0	0	0
Tipton	Campbell/Beck's Hybrids, Indianapolis	0	0	0	0	0	0
Vigo	Lynch/Ceres Solutions, Clinton	0	0	0	0	0	0
White	Foley/ConAgra, Brookston	0	0	0	0	0	0
Whitley	Boyer/NEPAC/Schrader	0	11	0	1	0	0
Whitley	Boyer/NEPAC/Kyler	5	5	1			

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

Prepare To Stockpile Forage For Late Fall And Early Winter Grazing

(Keith Johnson)

What does the word "stockpile" mean to you? My understanding of the meaning is to "store away for future use." Recently because of Covid-19, some families were stockpiling toilet paper. Some may have thought that the most-right word was hoarding! Within forage-livestock agriculture, the word stockpiling refers to growing forage in the pasture that can be used at a later time. A properly managed rotational stocking system allows this to happen. Livestock can graze other paddocks (cells) in the late summer and early fall while approximately one-fourth of the acreage is restricted from the livestock so forage can grow to be grazed in the late fall and possibly the early winter.



Rotational grazing a pasture permits stockpiling forage for grazing in the late fall and early winter. (Photo Credit: Ron Lemenager, Purdue University Extension Beef Specialist)

Application of up to 50 pounds of nitrogen per acre to stockpiled grass-dominant paddocks in late August to early September increases forage yield. Amount of increase will be dependent upon forage species, adequate rainfall, temperature, date of application, and the remaining length of the growing season. Tall fescue is an excellent stockpiling forage as it can accumulate more dry matter as compared to other grasses when temperature cools to 50 degrees F. If the paddocks have a dry matter yield contribution of 30 percent or more from legumes, there is no need to apply the nitrogen. Fertilizer prices remain high, but grazing pasture growth is likely a cheaper alternative than feeding hay that might be needed in late winter. If hay inventory is used before

pasture growth begins in late April or early May 2023, purchasing hay to meet the nutritional needs of livestock will likely have high cost.

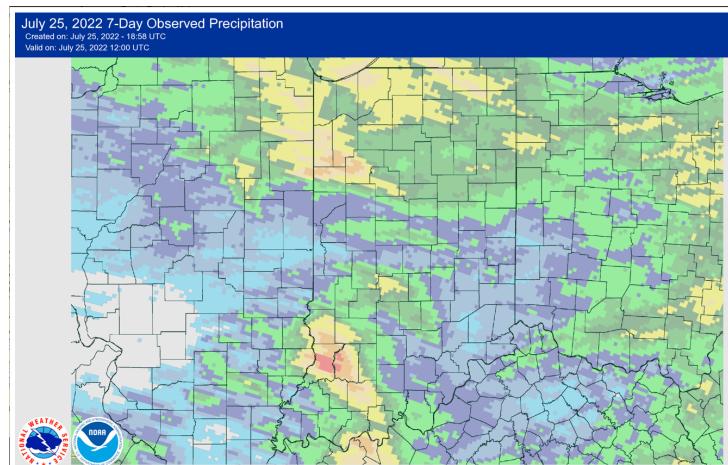
Carefully consider whether the number of livestock being grazed and hay inventory on hand justifies the opportunity to add nitrogen fertilizer to some paddocks to boost grass yield to extend the grazing season.

Flood Or Ponding Damage To Corn Late In The Growing Season

(Bob Nielsen)

- Excessive mid- to late season rainfall events can create havoc with corn fields.
- Immediate damage can be assessed within 5-7 days.
- Longer term consequences are dependent on subsequent weather.
- Expected risks are outlined in this article.

Excessive rainfall events (aka “goose-drowners”, “toad-stranglers”) that occur late in the growing season can cause flooding of rivers, creeks, and streams as well as ponded areas within fields distant from floodwaters. The consequences to grain yield and quality from the damage caused by such flooding/ponding are difficult to pinpoint with much accuracy because little research exists that addresses these chance-occurring yield-limiting factors. Risks and expectations, however, can be outlined.



July 25, 2022 7-Day Observed Precipitation for Indiana and surrounding areas. Source National Weather Service.

- **Crops inundated by standing water** at this time of the year typically do not survive as long as those similarly affected earlier in the season due to the warmer air and soil temperatures. Oxygen deprivation in saturated soils quickly causes significant deterioration and death of above- and below-ground plant tissue. Affected crops may only survive a few days with typical July or August temperatures.
- **Physical crop damage** (soil erosion, washing away of plants, lodging of plants, and plant tissue damage) occurs from the force of the flowing water on land adjacent to flooded creeks and rivers as well as from any debris caught up in the floodwaters.
- **Deposits of sediment and crop residues** that remain on crop plants once the water recedes can either outright smother

any surviving plants or greatly reduce their ability to capture sunlight and photosynthesize carbohydrates.

- Mud and crud that cakes the leaves and stalks encourage subsequent development of **fungal and bacterial diseases** in damaged plant tissue. In particular, bacterial ear rot often develops when flood waters rise up to or above the developing ears of corn plants ([Nielsen, 2003a; Nielsen & Ruhl, 1998](#)).
- Crops that technically survive less severe bouts of ponding and saturated soils nevertheless suffer significant **damage to their root systems**. The immediate effects will be stunting of plant development. In the longer term, root systems compromised by ponding and saturated soils today will be less able to sustain the crops during the remainder of the grain filling period. The effects of such compromised root systems will be more dramatic if hot and dry conditions prevail over coming weeks.
- For corn, damage to its root system today will predispose the crop to the **development of root and stalk rots** later by virtue of the photosynthetic stress imposed by the limited root system during the important grain filling period following pollination. Corn often responds to severe shortages of photosynthate by remobilizing stored carbohydrates from the lower stalk tissues to the developing grain. Not only does such remobilization weaken the lower stalk tissue, but it also increases the vulnerability of those “cannibalized” tissues to infection by root- and stalk-rotting fungal organisms ([Nielsen, 2021](#)). Monitor affected fields later in August and early September for the possible development of stalk rots and modify harvest-timing strategies accordingly.
- Loss of soil nitrate nitrogen in saturated soils due to **denitrification or leaching** processes can be excessive, especially given the current warm soil temperatures ([Camberato and Nielsen, 2017](#)). Effects of such nitrogen loss on crops this late in the growing season are difficult to estimate, but, coupled with significant root damage by saturated soils, will contribute to increased stress in corn during the remainder of the grain filling period.
- Assessing the effects of **hail damage** to corn can be challenging. Important factors include the amount of defoliation and stalk bruising caused by the hail stones relative to the growth stage of the crop. While hail damage can result in severe yield losses in corn, most of the time the human eye perceives greater damage than truly exists. Browse the following references ([Nebraska Extension, 2022; Nielsen, 2015; Vorst, 1993](#)) on hail damage assessment for more information.
- **Wind damage** to corn occurs either as stalk breakage (aka “green snap”) or root lodging (plants uprooted and laying nearly flat to the ground). The yield effect of “green snap” damage depends on the percentage of field affected and whether the stalk breakage occurs above or below the ear, but is usually serious regardless. Obviously, stalk breakage below the ear results in zero yield for that plant. Stalk breakage above the ear results in significant yield loss due to the loss of upper canopy photosynthesis capacity for that plant. Root lodged corn will recover or straighten up to varying degrees depending on the growth stage of the crop. Generally, younger corn has a greater ability to straighten up with minimal “goose-necking” than older corn. Yield effects of root lodging depend on whether

soil moisture remains adequate for root regeneration, the severity of root damage due to the uprooting nature of root lodging, and the degree of “goose-necking” that develops and its effect on the harvestability of the crop. Browse the following references for more information on wind damage to corn (Nielsen, 2013; Rees et al., 2020, Thomison, 2017; Lindsey et al., 2022)

Related References

- Camberato, Jim and RL (Bob) Nielsen. 2017. Soil Sampling to Assess Current Soil N Availability. Corny News Network, Purdue Agronomy Extension.
<http://www.kingcorn.org/news/timeless/AssessAvailableN.html> [URL accessed July 2022].
- Coulter, Jeff, Seth Naeve, Dean Malvick, and Fabian Fernandez. 2021. Flooded Corn. Univ. Minnesota Extension.
<https://extension.umn.edu/growing-corn/flooded-corn> [URL accessed July 2022].
- Nebraska Extension. 2022. Hail Know (resources for timely decisions) CropWatch, Univ. Nebraska Extension.
<https://cropwatch.unl.edu/hailknow> [URL accessed July 2022].
- Nielsen, R.L. (Bob). 2003a. Bacterial Ear Rot in Corn Due to Flooding. Corny News Network, Purdue Agronomy Extension
<http://www.kingcorn.org/news/articles.03/EarRot-0720.html>. [URL accessed July 2022].
- Nielsen, R.L. (Bob). 2003b. Corn & Soybean Loss From Floods & Ponding. Corny News Network, Purdue Agronomy Extension
<http://www.kingcorn.org/news/articles.03/Flooding-0717.html>. [URL accessed July 2022].
- Nielsen, Bob. 2013. Damage to Corn Plants by Strong Winds. Corny News Network, Purdue Agronomy Extension
<http://www.kingcorn.org/news/articles.13/WindDamage-0712.html> [URL accessed July 2022].
- Nielsen, Bob. 2015. Recovery From Hail Damage to Young Corn. Corny News Network, Purdue Agronomy Extension
<http://www.kingcorn.org/news/timeless/HailDamageYoungCorn.html> [URL accessed July 2022].
- Nielsen, Bob. 2021. Stress During Grain Fill: A Harbinger of Stalk Health Problems. Corny News Network, Purdue Agronomy Extension
<http://www.kingcorn.org/news/timeless/StalkHealth.html> [URL accessed July 2022].
- Nielsen, RL (Bob) and Gail Ruhl. 1998. Bacterial Ear Rot in Flooded Corn. Corny News Network, Purdue Agronomy Extension
<http://www.kingcorn.org/news/articles.98/p&c9828.html>. [URL accessed July 2022].
- Ortez, Osler, Greg LaBarge, Alexander Lindsey, Wanderson Novais. 2022. Managing Corn and Nitrogen with Water Excess Conditions. Ohio State Univ. Extension.
<https://agcrops.osu.edu/newsletter/corn-newsletter/2022-19/managing-corn-and-nitrogen-water-excess-conditions> [URL accessed July 2022].
- Rees, Jenny, Roger Elmore, and Al Dutcher. 2020. Wind-damage to Corn. CropWatch, Univ. Nebraska Extension.
<https://cropwatch.unl.edu/2020/wind-damage-corn> [URL accessed July 2022].
- Roth, Greg, Jud Heinrichs, Craig Altemose, Virginia Ishler and Marvin Hall. 2021. Managing Flood Damaged Crops. Penn. State Univ. Extension. <https://extension.psu.edu/managing-flood-damaged-crops>

[URL accessed July 2022].

Thomison, Peter. 2017. Wind Damage in Corn – “Green Snap” and Root Lodging. C.O.R.N., Ohio State Univ. Extension.

<https://agcrops.osu.edu/newsletter/corn-newsletter/2017-21/wind-damage-corn-green-snap-and-root-lodging> [URL accessed July 2022].

Lindsey, Alexander, Osler Ortez, and Peter Thomison. 2022. Strong Storms and Downed Corn – How will this affect yield? C.O.R.N. Newsletter, Ohio State Univ.

<https://agcrops.osu.edu/newsletter/corn-newsletter/2022-22/strong-storms-and-downed-corn-how-will-affect-yield> [URL accessed July 2022].

Vorst, Jim. 1993. Assessing Hail Damage to Corn. Purdue Univ. Extension Publication NCH-1.

<https://www.extension.purdue.edu/extmedia/nch/nch-1.html> [URL accessed July 2022].

Purdue Crop Chat Episode 38, Nutrient Deficiencies Hitting Indiana Crops

(Shaun Casteel) & (Dan Quinn)

This is Purdue Crop Chat, a regular podcast from Hoosier Ag Today and the Purdue University Extension Service, featuring Purdue Extension soybean specialist Dr. Shaun Casteel and Extension Corn Specialist Dr. Dan Quinn. On this episode, Shaun and Dan discuss current crop conditions and concerns they have moving forward.

They also dive into wheat harvest and how planting is going for double-crop soybeans.

This podcast is made possible by the Indiana Corn Marketing Council and Indiana Soybean Alliance. Your Indiana corn and soybean checkoff investments yesterday are paying off today. New research, new uses, demand creation — bringing dollars back to the farm.

Listen to the podcast [HERE](#) or click the image below.



Dr. Shaun Casteel



Dr. Dan Quinn

PURDUE CROP CHAT

PODCAST

presented by:



THE FUTURE IS OURS TO GROW

Drought Improving ... For Now

(Beth Hall)

Rainfall over the past few weeks has helped to improve drought conditions across much of Indiana. Northeastern and southwestern Indiana have benefited the most, removing previous *Anomally Dry* or *Moderate Drought* status from the U.S. Drought Monitor (USDM; Figure 1). Unfortunately, west-central Indiana and near the greater Cincinnati area have been missing out from most of these rain events, keeping these areas in low USDM categories for the time being.

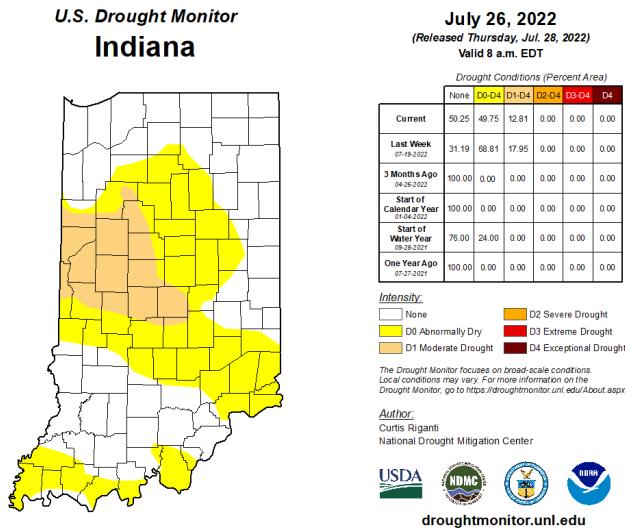


Figure 1. U.S. Drought Monitor for Indiana as of July 26, 2022.

High temperatures continue as summer progresses. Comparing this summer with average conditions over the past 30 years indicates that temperatures (both maximum and minimum) have been within a few degrees of normal. However, conditions have often felt much hotter, so what is going on? First, the higher humidity have made conditions (both day and night) feel hotter than usual. As mentioned in previous articles, higher humidity prevents plants and animals from naturally cooling through evaporation and transpiration. These higher humidity levels are likely attributed to higher temperatures. Even though most days are only a few degrees above normal, each degree increases the atmosphere's capacity to have more water vapor in suspension. Indiana has also experienced pulses of extreme heat throughout the season that have been offset by cooler-than-normal periods. When averaged over time, this mathematically indicates that temperatures across several weeks or months have been near normal, while masking those extreme hot periods. The Midwestern Regional Climate Center's (mrcc.purdue.edu) Corn Heat Stress Degree Day (SDD) tool shows how southern Indiana, in particular, has accumulated more SDDs than normal (Figure 2). Derived in a similar manner to growing degree days, this SDD model uses 86°F as a threshold with the assumption that most corn plants shut down when exposed to these extreme temperatures.

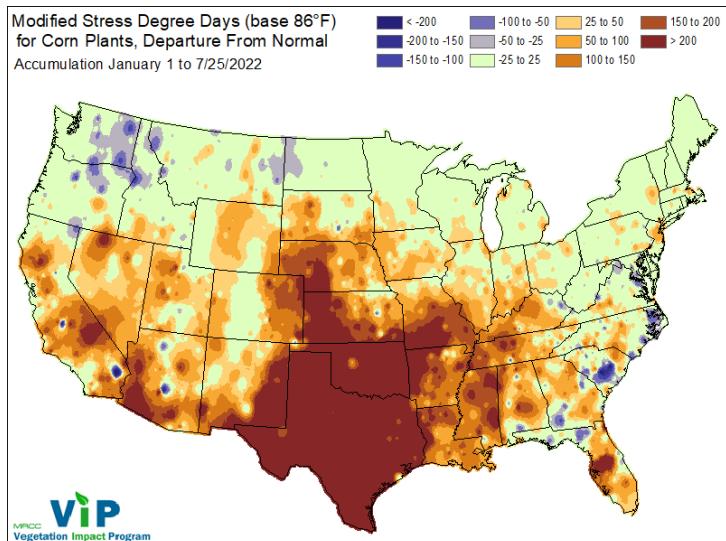


Figure 2. Modified corn heat stress degree day accumulation departures from normal for January 1 through July 25, 2022.
<https://mrcc.purdue.edu/VIP/indexSDD.html>

Climate outlooks for the next 6-to-14 days, the month of August, and the 3-month period of August-September-October are all favoring above-normal temperatures and below-normal precipitation (e.g., Figure 3). While this may sound like bad news, remember that impacts often are more related to the timing and rate of precipitation rather than the comparison of total amounts over longer (e.g., weeks and months) periods of time. This past spring, precipitation was typically below normal. However, rain fell every few days. While those total amounts over a 4-week period may have been below normal, they still kept the soil wet and limited field days. There is currently too little guidance about the timing and rates of precipitation when looking out beyond a week.

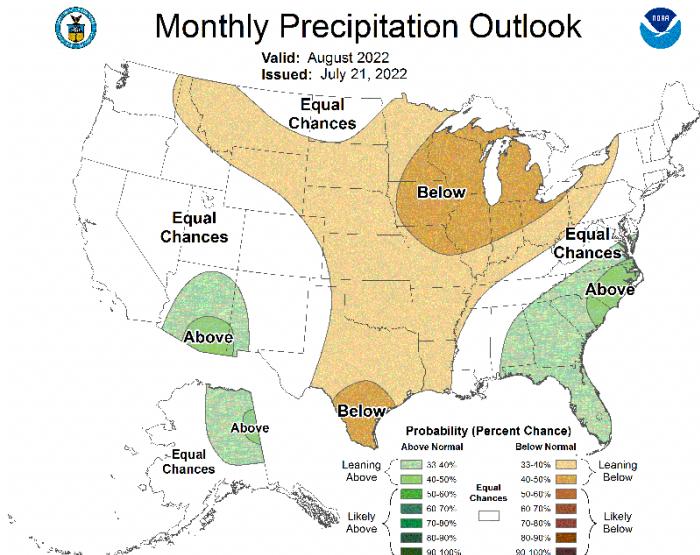


Figure 3. Climate outlook for August from the national Climate Prediction Center. Levels of shading indicate levels of confidence for above- or below-normal conditions to occur.

Figures 4 and 5 show the modified growing degree accumulations and departures from normal, respectively, for April 15 through July 27, 2022.

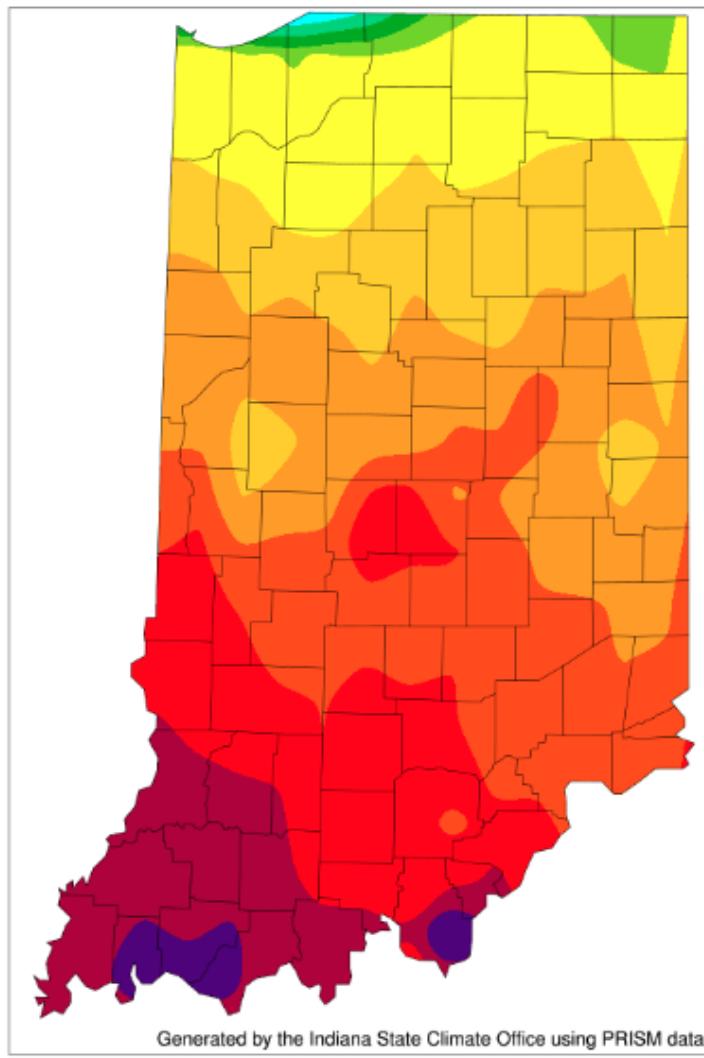


Figure 4. Modified growing degree day (50°F / 86°F) accumulation from April 15-July 27, 2022.

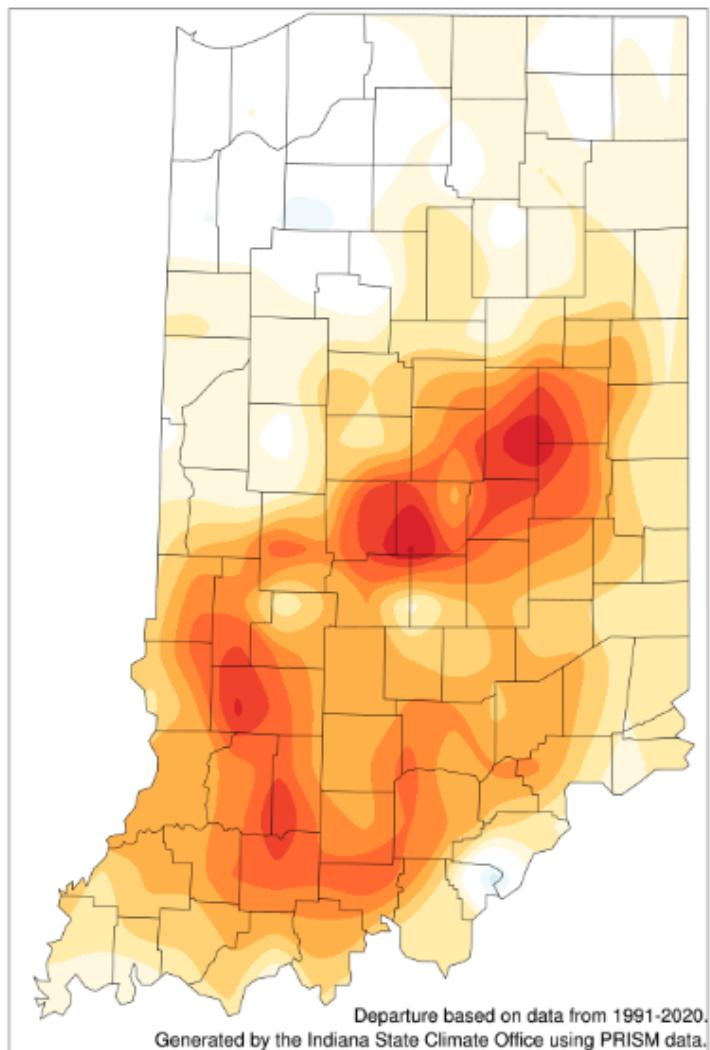


Figure 5. Modified growing degree day (50°F / 86°F) accumulation from April 15-July 27, 2022, represented as the departure from the 1991-2020 climatological average.

It is the policy of the Purdue University that all persons have equal opportunity and access to its educational programs, services, activities, and facilities without regard to race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability or status as a veteran. Purdue is an Affirmative Action Institution. This material may be available in alternative formats. 1-888-EXT-INFO Disclaimer: Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer.

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