

# Pest & Crop Newsletter

Purdue Cooperative Extension Service  
and USDA-NIFA Extension IPM Grant



This work is supported in part by Extension Implementation Grant 2021-70006-35390 / IND00001518G-1027053 from the USDA National Institute of Food and Agriculture and NCR SARE Award GNC20-311

## In This Issue

- [Western Bean Cutworm Moth Monitoring](#)
- [Early Season Hot Spells and Corn Grain Yield Potential](#)
- [Grain And Fiber Hemp Field Day 2024](#)
- [Forage Considerations During Summer](#)
- [National Forage Week - A Time To Celebrate Forages](#)
- [Hot And Dry Conditions Ahead](#)

## Western Bean Cutworm Moth Monitoring

(Christian Krupke) & (John Obermeyer)

As we move into the first days of summer, we are finished with the early season, migratory moths and caterpillars (armyworms, black cutworms) and are now into those that overwinter here. For those pheromone trapping for western bean cutworm moths, you should begin this week. This is just the beginning of an extended moth emergence and flight, with their peak activity expected 2-3 weeks from now. Those in high-risk areas, i.e., sandy soils, high moth flight and WBC history should be gearing up for field scouting of corn, even those with Bt-traits. Depending on the trait expressed by your corn hybrids, efficacy can be highly variable.

Scouting of **pre-tassel** corn should begin once multiple moths are being captured regularly. In five different areas of a field, inspect 20 consecutive plants for egg masses which are laid on the upper surface of the top leaves of corn and/or larvae that may have hatched and crawled to the whorl and begun to feed. Usually the newest, vertical leaf is the best place to look for egg masses. Young larvae need pollen to survive, and female moths are most attracted to cornfields that are just about to pollinate (pollen is the primary protein source for young larvae). However, moths will lay eggs on whorl stage corn when pre-tassel/pollinating corn is not available. After hatching, larvae immediately crawl down into leaf axils and the whorl for protection, and begin to feed on leaf tissue and any shed pollen they can find. Later damage from larvae, as they feed deep in the whorl (attacking the

tassel to get at pollen), will resemble corn borer or fall armyworm damage. Initially the damage will be subtle and not economically important (or even noticeable). Later stage, large larvae enter the ear and feed on corn kernels and can cause economic damage, and also can exacerbate ear rots, including Gibberella ear rot.

Remember that WBC larvae are no longer susceptible to most of the Bt traits in our corn hybrids and therefore scouting, followed by timely insecticide sprays are really the only reliable control option for the vast majority of producers located where this insect is common, principally the northern tier of counties in Indiana, extending into Michigan and parts of Ohio. Only Bt hybrids expressing the **Vip3a** toxin will offer reliable control of this pest, so be sure to know what you have in your field and scout as needed. See this handy [Bt Trait Table](#) to check where your hybrids fit in terms of the pests managed.

There is still time to order materials and begin trapping for your operation! We order our supplies from [Great Lakes IPM](#). Stay tuned for further news on Western Bean Cutworm as flight begins.



Equipment needed for western bean cutworm moth monitoring: universal (a.k.a., bucket) trap, pheromone lure, and a kill-strip



Two captured western bean cutworm moths at the bottom of the bucket trap next to the kill-strip

## Early Season Hot Spells and Corn Grain Yield Potential

(Bob Nielsen)

The early onset of unusually warm temperatures across much of the Corn Belt has farmers and markets alike questioning whether the yield potential of the 2024 corn crop is being compromised. The answer, as usual, is it depends.

Yield potential at this point in the season is determined by two yield components: Plants per unit area (acre, hectare) and number of potential kernels (i.e., ovules) on each plant. The third yield component, weight per kernel, is determined later in the season during grain filling (Nielsen, 2021).

The number of harvestable plants per unit area is largely determined by the time the crop reaches the 6-leaf stage of development. The majority of corn around Indiana has surpassed this stage, but the minority of fields planted the last week of May or later remain vulnerable to “floppy corn syndrome” and stand loss caused by rapidly drying surface soils and small root systems (Nielsen, 2022).

The number of potential kernels (i.e., ovules) is determined early in the season from about V5 to about V12-14 (Nielsen, 2023). One might imagine that the current unusual hot spell of temperatures could influence potential yield by influencing this ear size determination process.

The harvestable ear on a plant initiates at about leaf stage V5 and MAXIMUM row number is set for the ear by about V7. Determining MAXIMUM number of kernels per row is a longer process and is thought to be set by about V12-V14. I emphasized MAXIMUM kernel number because ACTUAL or HARVESTABLE number of kernels is influenced by growing conditions during and following pollination (Nielsen, 2020). My experience is that it requires EXTREMELY SEVERE stress

during leaf stages V5 to V12-14 to decrease MAXIMUM kernel numbers. That being said, however, some fields in Indiana are probably stressed enough during the current hot spell to impact the potential for kernel numbers prior to pollination. Those fields would be ones where early root development has been severely compromised to begin with. Those would be primarily fields with significant shallow soil compaction (wet spring + tillage) or soils that simply do not allow for deep root development (e.g., eroded hillsides). The combination of unusually warm temperatures for mid-June, moderately low humidities until recent days (both of which lead to high rates of soil evaporation and plant transpiration), brilliant sunlight, and either restricted root development or simply small root systems due to young plants can cause SEVERE stress on young plants. I began to see crops rolling a week ago on eroded slopes BEFORE we had the onset of 90+ weather.

Furthermore, remember that the number of ACTUAL kernels per plant is determined by the success of pollination and levels of stress up to about the milk stage (R3) of kernel development (Nielsen 2018). The plant produces way more potential kernels (i.e., ovules) than are usually harvested. It is not uncommon to find 50-55 ovules per row on an ear leading up to silking but the common range in ear size at harvest is more like 30-40 kernels per ear. The point here is that a reduction in OVULE number during the ear size determination period does not automatically translate to lower yield, particularly if growing conditions during pollination and early grain fill stages are favorable for kernel set.

### Related Resources

Nielsen, RL (Bob). 2018. Effects of Severe Stress During Grain Filling in Corn. Corny News Network, Purdue Agronomy Extension.

<http://www.kingcorn.org/news/timeless/GrainFillStress.html> [accessed June 2024].

Nielsen, RL (Bob). 2020. Kernel Set Scuttlebutt. Corny News Network, Purdue Agronomy Extension.

<http://www.kingcorn.org/news/timeless/KernelSet.html> [accessed June 2024].

Nielsen, RL (Bob). 2021. Grain Fill Stages in Corn. Corny News Network, Purdue Agronomy Extension.

<http://www.kingcorn.org/news/timeless/GrainFill.html> [accessed June 2024].

Nielsen, RL (Bob). 2022. “Rootless” or “Floppy” Corn Syndrome. Corny News Network, Purdue Agronomy Extension.

<http://www.kingcorn.org/news/timeless/FloppyCorn.html> [accessed June 2024].



Nielsen, RL (Bob). 2023. Ear Size Determination in Corn. Corny News Network, Purdue Agronomy Extension. <http://www.kingcorn.org/news/timeless/EarSize.html> [accessed June 2024].

---

## Grain And Fiber Hemp Field Day 2024

(Marguerite Bolt, [mbolt@purdue.edu](mailto:mbolt@purdue.edu))

[REGISTER HERE](#)

### Field Day Schedule

Tuesday, July 30, 2024

Agronomy Center for Research and Education

4550 US 52 West, West Lafayette, IN 47907

Sign in from 8:30 – 9:00 am EST in the Beck Center

Demonstrations from 9:00 am – 12:15 pm EST

Lunch and discussion from 12:15 pm – 1:00 pm EST

Please join us for the 2024 Grain and Fiber Hemp Field Day!

This half-day hands-on workshop will provide insight into the latest in grain and fiber hemp production and pest management. Topics include pest identification, plant diagnostics, how to collect samples, hemp processing, and products. Cost is \$20, payable before the event. Registration ends on July 25<sup>th</sup>. Boxed lunches will be provided at the end of the event. To learn more, go to

<https://ag.purdue.edu/events/departement/agry/2024/07/dtc-workshop-hemp-field-day.html>

Field day topics include:

- Grain and fiber production and processing
- Weed ID and management
- Insect identification
- Plant diagnostics and sampling
- Application of hemp in food science

---

## Forage Considerations During Summer

(Keith Johnson)

The weather this past week has been hot for June and little to no rain is projected to occur into the coming week. The following are considerations to heed to improve forage growth and inventory of stored feed for ruminant livestock and equine if the forecast holds true.



With planning, options can be put in place to reduce the concern caused by a summer dry period. The warm-season annual, sorghum-sudangrass, is being grazed. (Photo Credit: Keith Johnson)

- Inventory current forage resources and routinely determine how much more forage, other than what you have at time of assessment, might be needed to get to spring grazing in 2025. If forage inventory continues to be low despite a return for more usual rainfall, strategize a plan to avoid the stress of an immediate crisis. Keep in mind that hay purchase can be expensive if the purchase is delayed until late winter. The following link has many points of consideration. ([Beef Management Practices: When Forages are in Short Supply Because of Drought](#)).
- Scout pasture for weed species present and develop a control plan if they are competing with desired forages and/or are poisonous concerns. An excellent resource for purchase is the [2024 Weed Control Publication](#). After selecting potential herbicides to control weeds of concern, read full labels for details. The following website is a resource about potentially common toxic plants in Indiana ([Toxic Plants \(purdue.edu\)](#)).
- While scouting for weeds, evaluate if cool-season grass/legume or cool-season grass pasture growth is less than 4 inches in height. If it is, feed stored forage in a sacrifice lot/paddock to livestock until pasture growth is at least 8 inches tall (An aside – Many pastures look more like golf putting greens ). *A full bite of forage is the goal; not nibbles.* Plants need recovery after use, just like we need recovery after hard days of work.
- If soil tests have not been done on pasture or hay fields, get the task accomplished so the *proper* amount of lime and fertilizer can be applied. Grass-only pasture and hay fields will respond to nitrogen fertilizer, especially if none was applied in late winter

or early spring and moisture is *no longer* limiting growth. When submitting the soil samples to the laboratory, provide name of where the soil was probed, potential yield, and forage types. Preferably, sample by soil type or grid and cropping history to a depth of 4 inches on already established forages. The NRCS- USDA Web Soil Survey is a very useful resource in learning about the soils on your farm. ([Web Soil Survey - Home \(usda.gov\)](#))

- If you do not use a rotational grazing system, take time to consider putting one into practice from this point forward. The advantages of a rotational grazing system as compared to a continuous grazing system are:
  - Recovery time for forages results in better plant health
  - Longer grazing system
  - Less hay fed
  - Improved nutrient recycling from feces and urine
  - Reduced spot grazing (Spot grazing is grazing of forage regrowth and avoidance of other forage in the pasture)
  - Opportunity for those that harvest their own hay to make it on a portion of the pasture acreage where it can be safely done in the spring.

Take time to read the information in this link about improving pasture management. [Management-Intensive Grazing in Indiana \(purdue.edu\)](#)

- If winter wheat is part of your farm enterprises, an immediate doublecrop seeding of sudangrass, sorghum-sudangrass, or pearl millet after grain harvest should be considered if forage resource is limiting. These crops can be grazed, made into traditional chopped silage, or ensiled as baleage. Hay can be an option *if an extended dry period* after cutting occurs to get to a safe moisture content (less than 18 percent in large round bales). The prussic acid concern with use of sorghum-sudangrass and sudangrass at freeze time can be managed with planning.  
[AY-378-W — Managing the Prussic Acid Hazard in Sorghum \(purdue.edu\)](#)  
[Reduce the Fear: Managing Prussic Acid in Sorghum, AY-400-WV - YouTube](#)  
Consider brown midrib hybrids/varieties (BMR) if improved digestibility is ideal for the livestock being fed. Teff is another forage option if hay is the desired harvest type. If seeding is delayed until mid-to late-

- August, a good option for fall grazing is seeding a combination of spring oats and forage turnips. Spring oats alone can be harvested has a stored forage, too.
- If the winter feeding area is currently growing unpalatable plant growth, get the weeds under control and seed one of the forage types mentioned in the previous bullet point.
  - Scout alfalfa fields for the insect potato leafhopper and follow through with a control plan if the economic threshold population is exceeded. This pest can significantly reduce yield if a potato leafhopper resistant alfalfa variety was not used and the population is high. Control needs to occur before damage is obvious ([potato-leafhopper\\_forage.pdf \(purdue.edu\)](#) and ([E-220.pdf \(purdue.edu\)](#))).

Let's hope that gentle rain without storms occurs in the coming weeks and that cooler temperatures prevail. That likely won't be how weather unfolds, but doing nothing to make a forage program better is definitely not a wise plan.

---

## National Forage Week – A Time To Celebrate Forages

(Keith Johnson)

*In appreciation to those that produce and utilize forages on their farms, provide forage-related inputs, and educate people about forages.*

National Forage Week (June 16-22) is concluding this week. The leadership team of the Indiana Forage Council, a not-for-profit organization ([www.indianafortage.org](#)), decided it was important to share on the council's Facebook page the contributions forage crops provide the world. There was a Challenge Contest this year that encourage individuals to share a picture on Facebook about the theme of the day. If you did not see the daily posts, they follow.





2024 National Forage Week  
Challenge Day 2

DEEP-ROOTED FORAGE PLANTS HELP IMPROVE SOIL STRUCTURE, ENHANCE WATER INFILTRATION, AND REDUCE EROSION, THEREBY PROMOTING SOIL HEALTH AND PREVENTING DEGRADATION

<https://indianaforage.wordpress.com/>

<https://indianaforage.wordpress.com/>

2024 NATIONAL FORAGE WEEK  
CHALLENGE DAY 3

Besides providing forages to our livestock, these fields also provide feed and habitats to many wildlife!

Forages are purrr-fect

for all my naps.

Today's Challenge:  
Participate in outdoor recreation.  
Take a walk, play ball, or other activities you enjoy.

2024 National Forage Week

Forages are moo-velous!

Today's Challenge:  
Say hi to your livestock friends and take a selfie with them.

2024 National Forage Week

[indianaforage.wordpress.com](https://indianaforage.wordpress.com/)



2024 National Forage Week Challenge Day 6

**I F C**

AMERICAN FORAGE & GRASSLAND COUNCIL

<https://indianaforage.wordpress.com>

<https://www.afgc.org/national-forage-week/>

**DON'T MISS OUT ON AMAZING EDUCATIONAL AND NETWORKING OPPORTUNITIES!**

**JOIN THE INDIANA FORAGE COUNCIL TODAY!**

**I F C**

<https://indianaforage.wordpress.com>

**Forages keep our water**

**be-e-we-tiful.**

indianaforage.wordpress.com

**Today's Challenge:**  
**Take a creative photo with water, whether drinking, recreation, or livestock.**

**I F C**

2024 National Forage Week

Celebrate every day with an appreciation for all that forages do for the world. Forage systems encompass a diverse array of grasses, legumes, and other plants, and connect many aspects of our lives. By managing healthy forages, we contribute to a healthy ecosystem:

- When forages cover a landscape, soil erosion is minimal, and water quality is improved.
- Thriving forages provide nutrition essential for optimal livestock health and performance.
- The end products of meat, milk and fiber provide necessities for a growing population.
- Forages offer a beneficial habitat to wildlife.
- Because legumes produce nitrogen, the addition of nitrogen fertilizer to enhance grass growth is not necessary on a field with legumes and grasses growing together.
- Someday, high-fiber forages could be converted to a fuel resource.

Have some ice cream and a cheese burger. It is a great indirect way to eat forages! Remember, forages have value to society beyond providing feed for livestock.

## Hot And Dry Conditions Ahead

*(Beth Hall)*

As I write this article, in a cool, air-conditioned office, I hear others talking about how hot it is outside. I see weather app icons showing bold suns that stress how sunny and hot conditions are and will continue to be. I read Special Weather Statements, issued by the National Weather Service, about an extended period of hot and humid conditions continuing. It is that time of year, so how hot has

it been and how long with these conditions continue?

Interestingly, as I look at the last 30 days, most of Indiana has been only one-to-two degrees (F) above normal with respect to average daily temperature with most of that influenced by the daily maximum (high) temperatures as opposed to the daily minimum (low) temperatures (Figure 1). However, something atmospheric scientists call a “heat dome” has moved into our area. These are typically rather large in spatial extent (i.e., regional, not state-sized) and tend to stick around for a while. Due to this stagnation, winds are typically calmer, preventing both vertical mixing of the cooler air above and horizontal mixing from storm systems moving through the area. Growing degree-day accumulations have therefore been increasing faster than normal and will continue to do so over the next few weeks. Figures 2 and 3 show the accumulated modified growing degree days and departures from normal, respectively, since April 15<sup>th</sup>. Across Indiana, these growing degree days have accumulated over 220 units higher than normal for this time of year.

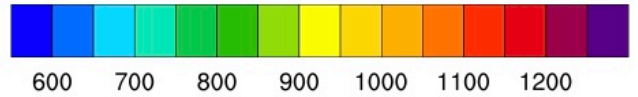
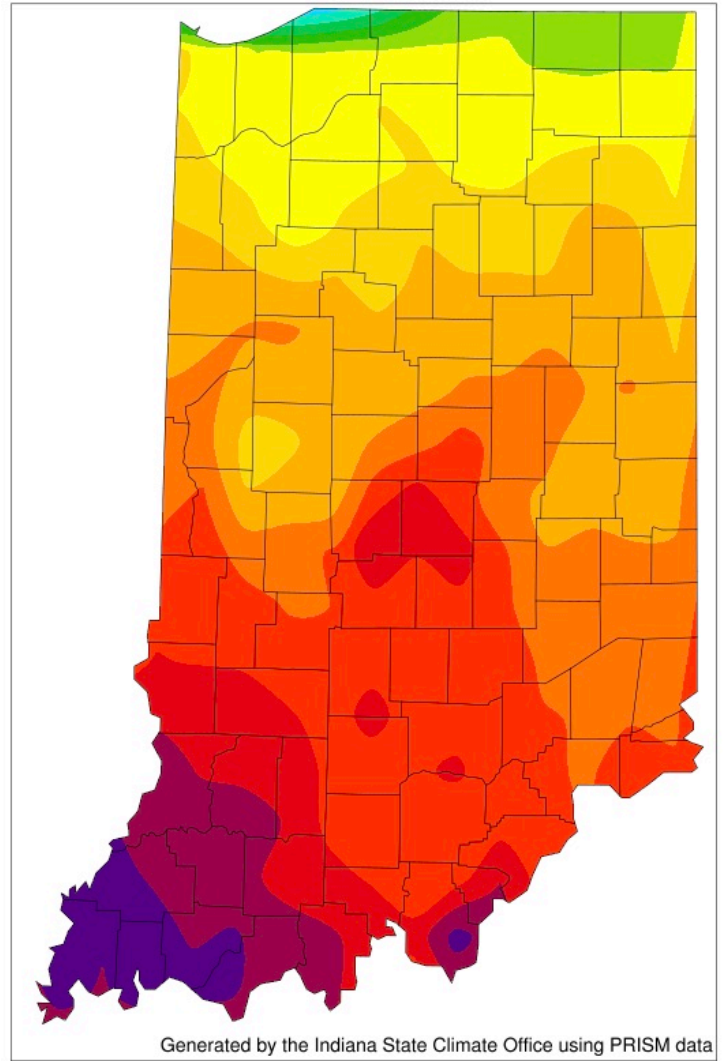
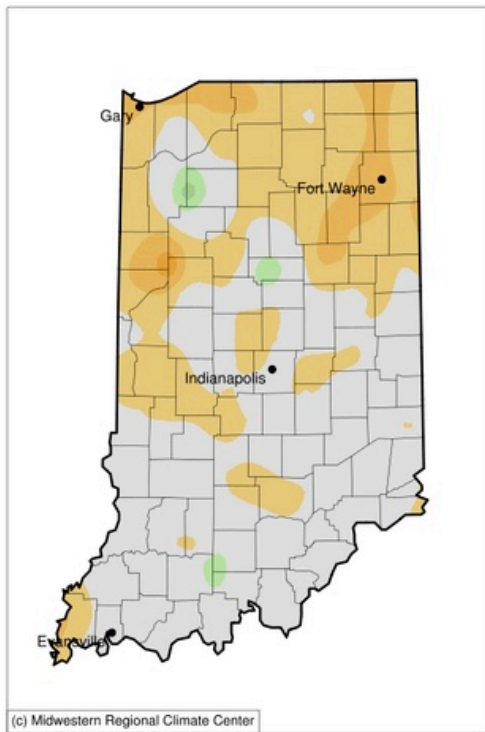


Figure 2. Accumulated modified (50 F / 86 F) growing degree days for April 15 through June 19, 2024.

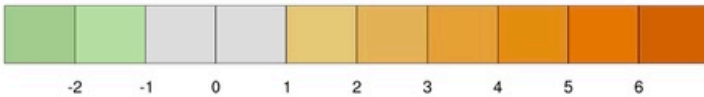


Figure 1. Average temperature (F) departure from the 1991-2020 climate normal period for May 22 through June 19, 2024.



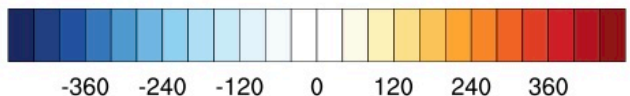
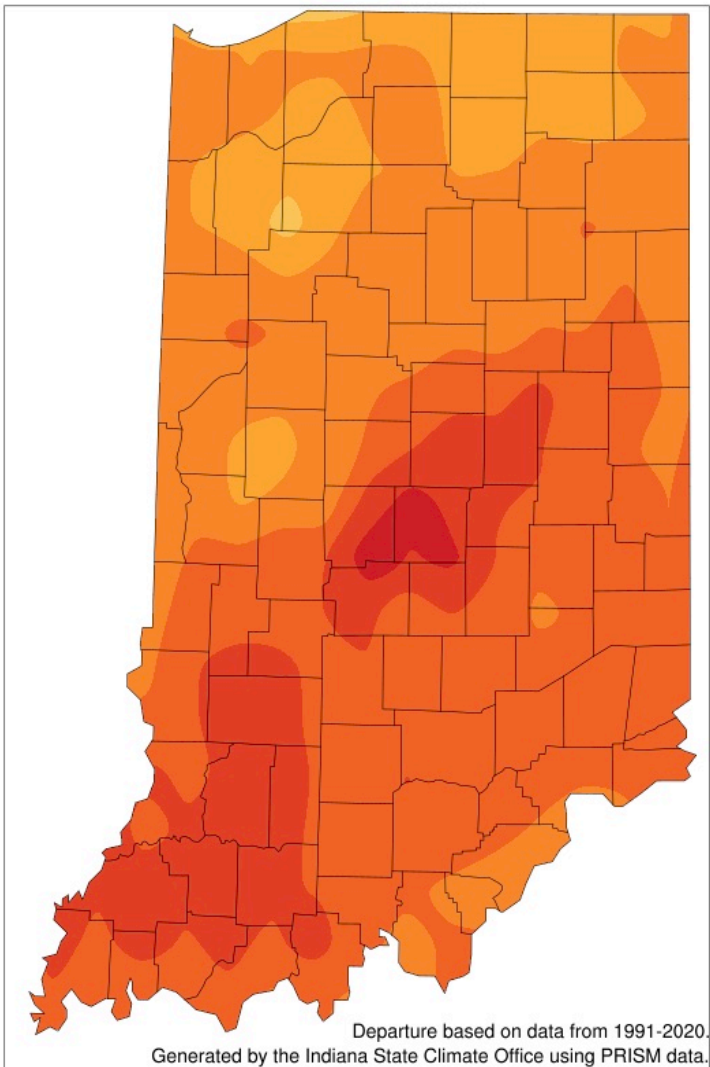
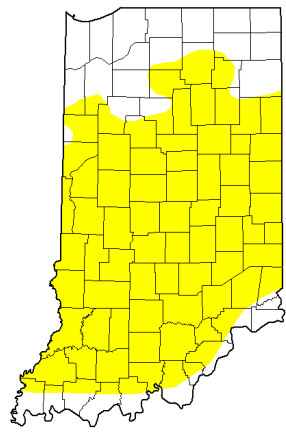


Figure 3. Accumulated modified (50 F / 86 F) growing degree-day departures from the 1991-2020 climate normal period for April 15 through June 19, 2024.

When these stagnant conditions persist, a rapid intensification of drought is more likely. Certainly, an extended period of little-to-no rain will cause a drought but combine that with above-normal temperatures and increased rates of evapotranspiration will occur. That is what has been happening over the past few weeks and has led to the U.S. Drought Monitor introducing “Abnormally Dry (D0)” status across much of Indiana (Figure 4). Another characteristic of these stagnant high-pressure areas is that any precipitation that might occur is likely to be very light and localized. Therefore, widespread improvement is unlikely until this system gets pushed out of the region and a

more active weather pattern can set in.

**U.S. Drought Monitor  
Indiana**



**June 18, 2024**  
(Released Thursday, Jun. 20, 2024)  
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	25.84	74.16	0.00	0.00	0.00	0.00
Last Week 06-11-2024	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago 03-19-2024	85.56	14.44	0.00	0.00	0.00	0.00
Start of Calendar Year 01-01-2024	10.70	89.30	81.12	12.88	0.00	0.00
Start of Water Year 09-26-2023	1.38	98.62	85.30	0.00	0.00	0.00
One Year Ago 06-20-2023	2.35	97.65	52.83	10.65	0.00	0.00

**Intensity:**  
 None (white)      D2 Severe Drought (orange)  
 D0 Abnormally Dry (yellow)      D3 Extreme Drought (red)  
 D1 Moderate Drought (light orange)      D4 Exceptional Drought (dark red)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:  
Richard Tinker  
CPC/NOAA/NWS/NCEP

USDA    NDIC    NWS    NOAA

droughtmonitor.unl.edu

Figure 4. U.S. Drought Monitor map for Indiana based on conditions through June 18, 2024.

According to the national Climate Prediction Center, there is high confidence that above-normal conditions will continue in our area through the rest of June and into early July. The big question is whether there will be enough precipitation during this period. Climate prediction models are only slightly favoring above-normal precipitation over this two-week period with higher chances early on. Even then, I would expect amounts to be relatively localized and short-lived. The current 7-day forecast of precipitation is predicting only 0.25"-0.5" in southern Indiana with higher amounts for the northern part of the state (Figure 5). Combine this with the 7-day forecast of reference evapotranspiration - that range from 1.5"-1.75" — and there is likely to be a moisture deficit developing quickly.

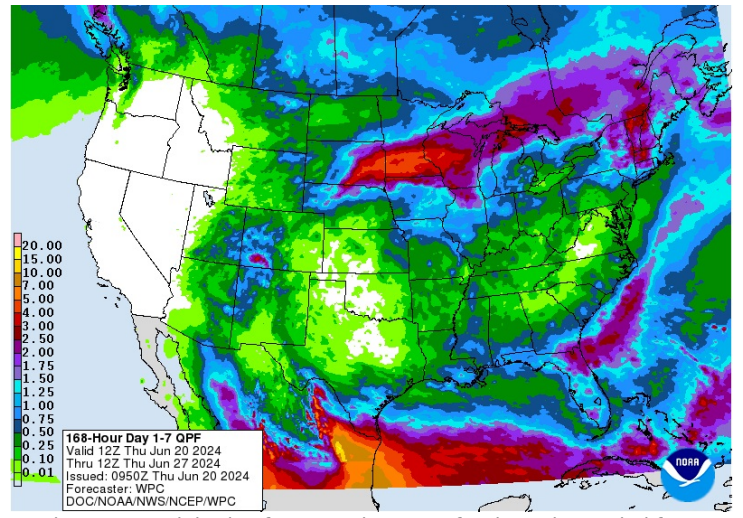


Figure 5. Precipitation forecasted amount for the 7-day period from June 20-27, 2024.



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](http://extension.entm.purdue.edu/newsletters/pestandcrop)  
Editor: Tammy Luck | Department of Entomology, Purdue University, 901 Mitch Daniels Blvd, West Lafayette, IN 47907