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Pest & Crop Newsletter

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In This Issue

LAST CALL: Resilient Agricultural Practices And Priorities Survey

(Christian Krupke)

Increasing interest in practices like cover cropping and soil health includes challenges across a range of agronomic factors, including pest management.

To help assess what's important to our clientele and improve the focus of Purdue applied research and extension programs, we're requesting your input on a short survey – it should take no more than 10 minutes to complete and it is anonymous. Thank you for your time!

https://purdue.ca1.qualtrics.com/jfe/form/SV_8uAHzaJ8Qlcwepg

Insect Trapping Network

(Christian Krupke)

As many regular readers know, our longtime IPM Specialist, John Obermeyer, retired last week after over 30 years of dedicated service. Among his many duties were regular contributions to this newsletter that included coordination and reporting of the insect trapping network that monitored weekly captures of armyworms, black cutworms, corn earworms and other insects over the years.

Whether John's position will be refilled is currently unknown. Also unclear is whether federal funding will be available to support many of our critical IPM-related activities, including insect trapping.

The bottom line is that the insect trapping network will not be active this year, and we hope to return to regular activity in spring of 2026. Stay tuned!

Cover Crops, Winter Annual Weeds, Caterpillars And Crops

(Christian Krupke)

Every spring, black cutworm moths and armyworms invade our state. They don't overwinter here, but move north each spring seeking sites to lay eggs. Both are sporadic and unpredictable and although trap counts help, they are not always a reliable predictor of larval populations. At this time, when we may see damage to crops, it's worth reviewing a few key parts of the biology of these annual invaders.

Larvae of both moths will be actively feeding now. The increased popularity of cereal rye as a cover crop presents new opportunities for egg-laying female **armyworms** to find attractive food sources (grasses are their favored hosts), while **black cutworms** may favor broadleaf weeds, including chickweed and a range of cover crops.

A true armyworm larva on a grass host.

For both species the highest risk for egg laying occurs where dense vegetation (either cover crops or winter annual weeds) is present. Fields with sparse weeds are not likely to harbor as many larvae. In both cases, the risk comes when annual weeds or cover crops are terminated and the hungry caterpillars move onto the main crop for feeding – neither black cutworms or armyworms are obligate corn feeders but both will do well on corn seedlings, with black cutworm able to feed on soybean as well. Armyworm larvae will attempt to feed on soybean, but cannot effectively digest the foliage and will die shortly afterwards.

The question about ideal termination often arises. Ideally, cover crops or dense annual weeds will be terminated 2-3 weeks before corn emergence. With the wet weather of most springs, this often is not possible. A period of weeks is ideal, but there is not a magic number of days to starve out caterpillars. The rule of thumb is that the longer the

period between termination of cover crops or weeds and emergence of the main crop, the better. Caterpillars need to feed often to survive and cannot go without food for long, so even a few days of no host plants will reduce their populations dramatically.

The five larval instars, or stages, of black cutworm. Only the larger instars damage plants by "cutting", as shown; younger larvae will notch leaf edges.

One last reminder: Don't be dependent on traited-corn, as high armyworm or cutworm infestations may still cause significant damage before the Bt-proteins suppress their feeding. An ideal reference to understand which Bt-traited corn has efficacy against specific insects is the "Handy Bt Trait Table." This table, produced by Chris DiFonzo, Field Crops Entomologist at Michigan State University, is worth a look. It can be downloaded HERE. Remember that seed-applied neonicotinoid insectides do not have efficacy against armyworm, although there are many effective options for control with foliar insecticide sprays. A reminder that with this insect, especially when they are "marching" in large numbers, scouting for caterpillars and damage still wins the day.

Foliar Diseases Of Wheat And Fusarium Head Blight (Scab) Management

(Darcy Telenko)

It is time to keep an eye on wheat for diseases and scab risk. There are a number of foliar diseases in wheat to watch out for. These include – leaf, strip and stem (Fig. 1A,B,C), Septoria leaf spot and tan spot (Fig. 2A,B). A number of resources are available to help distinguish wheat leaf diseases and "*Identifying Rust Diseases of Wheat and Barley.*" https://www.ars.usda.gov/ARSUserFiles/50620500/Cerealrusts/Rust_Diseases_National.pdf

Samples can always be submitted to the Purdue Plant Pest Diagnostic Lab for disease identification and confirmation.

Wheat in Indiana is between 8-10 Feekes at the end of last week and some of our southern fields are at boot stage to early head emergence (Feekes 10-10.1). Therefore, I expect flowering to start over the next week or so (Fig 3A). During flowering (anthesis) **warm, wet weather** with high relative humidity will favor the development of Fusarium head blight (scab). Fusarium head blight (FHB) is caused by the fungus *Fusarium graminearium*. It infects wheat during flowering, beginning at Feekes 10.5.1. Symptoms of FHB will appear as bleaches spiklets on the head later in the season (Fig 3B). Infection can lead to small or shriveled grain kernels referred to as "tombstones." In addition to shriveled grain this fungus produces mycotoxins such as deoxynivalenol (DON), which can accumulate in the infected grain.

Figure 1. Pustules of leaf rust (A), strip rust (B) and stem rust (C) in wheat. (*Photo Credit: A) A. Friskop at https://cropprotectionnetwork.org/encyclopedia/leaf-rust-of-wheat, B). C. Grau at https://cropprotectionnetwork.org/encyclopedia/stripe-rust-of-wheat and D. Telenko, Purdue University.*)

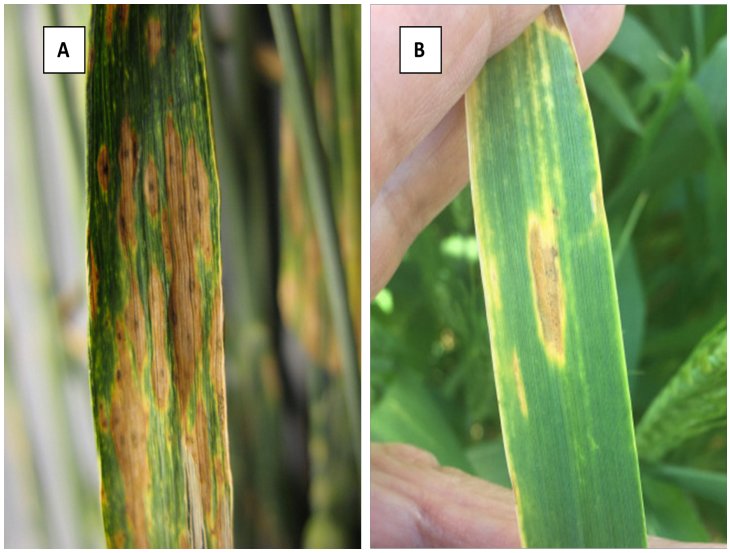


Figure 2. A) Elliptical, tan-brown lesions of Septoria tritici blotch, and 2) tan spot leaf lesion on wheat. (*Photo Credit: M. Burrows*) https://cropprotectionnetwork.org/encyclopedia/septoria-tritici-blotch-of-wheat and https://cropprotectionnetwork.org/encyclopedia/tan-spot-of-wheat

Figure 3. A) Wheat beginning to flower and B) Fusarium head blight infection. (*Photo credit: Darcy Telenko*)

A number of resources are available to help you make disease management decisions in wheat.

1) **The Fusarium Risk Assessment Tool** is available at the following website. http://www.wheatscab.psu.edu/. This tool estimates the risk of a Fusarium head blight epidemic (> than 10% field severity) using weather conditions (temperature, rainfall, and relative humidity) measured 15 days prior to flowering. See below for the current risk map – much of Indiana is colored yellow (medium risk for scab development) and red (high risk for scab development) due to recent wet weather.

Keep in mind that actual disease risk depends heavily on the growth stage of wheat in your area. We are still on the early side; the estimate is most relevant just prior to flowering (Feekes 10.5.1) or the early stages of grain development. Fusarium head blight risk is highest when there are three or more days with extended periods of high relative humidity and moderate temperatures (65 to 80°F) during the early stages of kernel development.

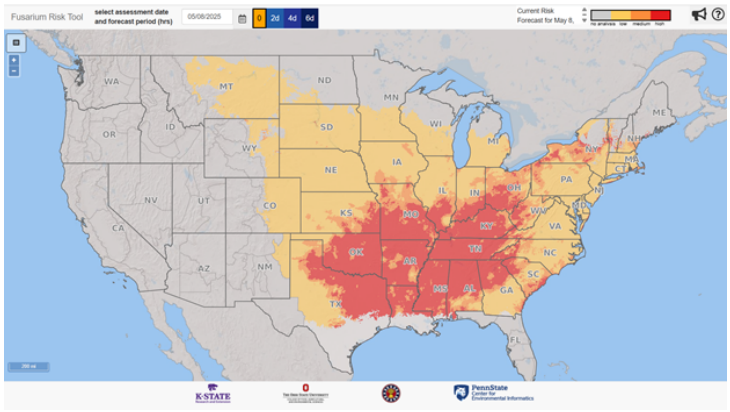


Figure 4. Fusarium Risk Assessment Tool Indiana map generated on 8 May 2025. Red = high risk, Orange = medium risk, and Yellow = low risk for Fusarium head blight on wheat just prior to flowering or the early stages of grain development. (Image credit: http://www.wheatscab.psu.edu/)

Farmers and crop advisors can sign up for alerts from the U.S. Wheat and Barley Scab Initiative, these can be sent to a cell phone as a text or email. To sign up visit https://scabusa.org/scripts/FHB_Alerts/

2) **Fungicide Application:** A fungicide application might be considered if a Fusarium head blight (FHB) susceptible variety is planted, or if you are worried about scab on your farm. These applications should be made at Feekes 10.5.1, or early flowering to suppress FHB. Fungicides recommended for FHB and DON include Prosaro, Caramba, Proline, and Miravis Ace. The use of products containing strobilurin fungicides may result in higher levels of DON accumulation in grain when damaged by FHB. These are not labelled for FHB management.

Fungicide Efficacy Tables are updated yearly and available from the Crop Protection Network

- Fungicide Efficacy for Control of Wheat Diseases CPN -3002 http://doi.org/10.31274/cpn-20190620-031
- Optimizing Fungicide Use for Fusarium Head Blight (Scab) and Associated Mycotoxins CPN-3001 are two available resources (https://cropprotectionnetwork.org/publications/optimizing-fungicide-use-for-fusarium-head-blight-scab-and-associated-mycotoxins).

These tables can help you identify products to use based on your targeted disease. As a reminder follow the label on harvest restriction as some products may have 30 to 45 days required between last fungicide application and harvest.

Luckily, most of our wheat is still a week or so from flowering, but this should be a warning to keep an eye on your fields. Those most at-risk would-be fields that were planted to a Fusarium head blight susceptible variety or those with limited rotation that follow a previous crop of wheat or corn.

Three New Tools Available To Help Make Informed Disease Management Decisions This Season

(Darcy Telenko)

I am excited this season to be able to share three new tools from the Crop Protection Network. I strongly recommend you bookmark these on your favorite electronic device(s).

1. Crop Disease Forecasting https://cropprotectionnetwork.org/crop-disease-forecasting
2. Fungicide Efficacy Tool https://cropprotectionnetwork.org/fungicide-efficacy-tool
3. Corn Fungicide ROI Calculator https://cropprotectionnetwork.org/fungicide-roi-calculator

These tools are from a culmination of a long-standing collaboration of university extension specialists as part of multiple working groups such as the Corn Disease Working Group (CDWG), The North Central Regional Committee on Soybean diseases (NCERA-137), The North Central Regional Committee on Management of Small Grain Diseases (NCERA-184), and The Alfalfa Pest Management Working Group. Many of these groups have developed annual uniform testing protocols which are then implemented across the country in various states.

Both the Fungicide Efficacy Tool and Corn ROI calculator are based on unbiased, research-based data collected from university uniform trials. Usually, we test between five to 10 fungicide products per year, per trial. Products are selected based on availability and market share, and typically represent products available to and used by a majority of farmers. Focus is also placed on newer products where efficacy data might be lacking across the corn, soybean, and wheat production belts of the United States. This includes data from here in Indiana. Our research program has contributed data since 2018 from trials that we have run at the Purdue Agricultural Centers (PACs) and Purdue Agronomy Center for Research and Education (ACRE). We have also contributed disease data for the tar spot, gray leaf spot, and frogeye models in the Crop Risk Tool. None of our work is possible without

support from multiple funding sources, as support will vary state to state. Here in Indiana, we have had support from Indiana Corn and Marketing Council, Indiana Soybean Alliance, the National Predictive Modeling Tool Initiative, National Corn Growers Association, North Central Soybean Research Program, United Soybean Board, and National Wheat and Barley Scab Initiative for many research projects over the last seven field seasons.

Crop Risk Tool

https://cropprotectionnetwork.org/crop-disease-forecasting

The Crop Risk Tool is providing weather-based forecasting and risk assessments for various crop diseases, helping farmers, crop advisors, and agricultural researchers to make data-driven decisions.

Disease models available for field crops:

- Corn: tar spot and gray leaf spot
- Soybean: white mold and frogeye leaf spot

In addition, there are models for dry beans, potatoes, tomatoes, carrots, beets and onions.

In the tool you have the ability to upload or select field sites of interest. These sites will be remembered upon returning to the website from the device they were entered. I actually downloaded the CSV and have all my Purdue sites available on both my computer and cell phone. See below in Figure 1 where I have pulled the weather data from the past month. The tool will also allow you to go back in time and look at the last year (be patient if you have a number of sites, as it may take the model a short time to acquire all site-specific weather data to run.

A few things to keep in mind when running these disease risks:

1. The model assumes the disease and/or spores are present in the field (fields with a history).
2. The crop is currently at a growth stage that the disease is of concern, so for corn that would be V10 to R3, soybean for white mold it would be growth stages R1-R3 (flowering) AND when the rows are nearly closed, and for frogeye leaf spot when in the growth stages R1-R5.

This is a great new tool to explore. It can also be a tool for researchers as it is an easy interface that will allow you to view and download hourly weather data for any point in the continental United States. The current models will compute daily values, moving averages, growing degree days, and selected plant disease risk values (more information is available on the website).

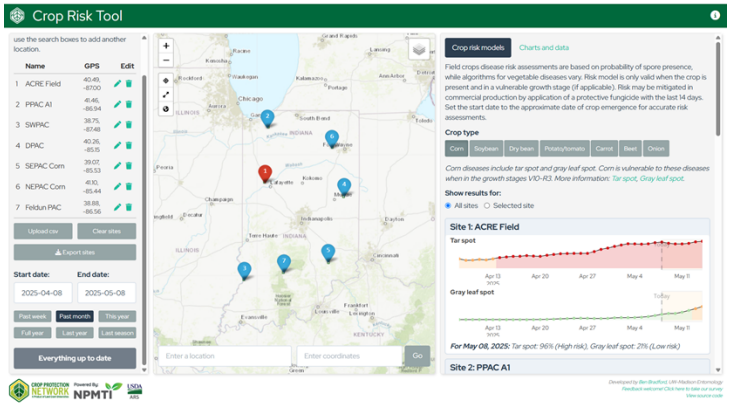


Figure 1. An example of the Crop Risk Tool and the Purdue farms we are monitoring across Indiana. It includes an example of the risk of the past month for tar spot and gray leaf spot should the crop be at growth stages V10-R3 (accessed May 8, 2025).

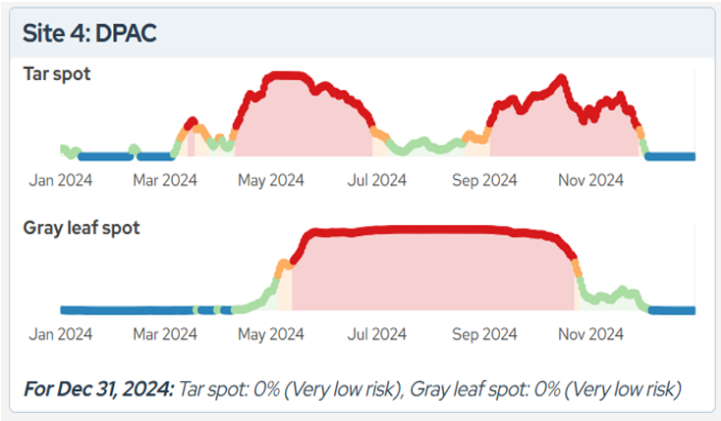


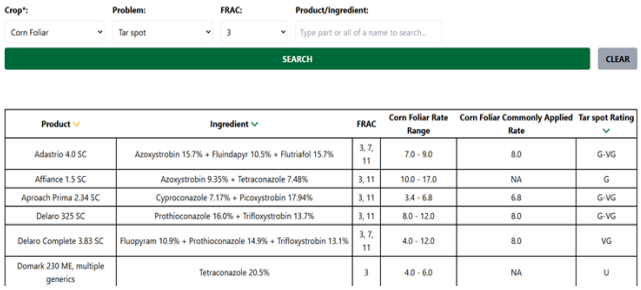
Figure 2. A historic review of last year's risk for tar spot and gray leaf spot at the Davis Purdue Ag Center, Farmland IN. This area in Indiana did see some significant issues with tar spot in 2024.

Fungicide Efficacy Tool

https://cropprotectionnetwork.org/fungicide-efficacy-tool

The fungicide efficacy tool will allow you to quickly filter the fungicide efficacy table data created by the Crop Protection Network for the various crops, specific disease targets and/or products of interest.

See an example of corn foliar, tar spot and FRAC 3 search in Figure 3.



Product	Ingredient	FRAC	Corn Foliar Rate Range	Corn Foliar Commonly Applied Rate	Tar spot Rating
Adastrio 4.0 SC	Azoxystrobin 15.7% + Fluindapyr 10.5% + Flutriafol 15.7%	3, 7, 11	7.0 - 9.0	8.0	G-VG
Affiance 1.5 SC	Azoxystrobin 9.35% + Tetraconazole 7.48%	3, 11	10.0 - 17.0	NA	G
Aproach Prima 2.34 SC	Cyproconazole 7.17% + Picoxystrobin 17.94%	3, 11	3.4 - 6.8	6.8	G-VG
Delaro 325 SC	Prothioconazole 16.0% + Trifloxystrobin 13.7%	3, 11	8.0 - 12.0	8.0	G-VG
Delaro Complete 3.83 SC	Fluopyram 10.9% + Prothioconazole 14.9% + Trifloxystrobin 13.1%	3, 7, 11	4.0 - 12.0	8.0	VG
Domark 230 ME, multiple generics	Tetraconazole 20.5%	3	4.0 - 6.0	NA	U

Figure 3. A search of the Fungicide Efficacy Tool for products available for tar spot on corn that contain a FRAC 3 active ingredient.

Corn Fungicide ROI Calculator

https://cropprotectionnetwork.org/fungicide-roi-calculator

The Corn Fungicide ROI Calculator is a new tool that can help farmers make a decision about applying a fungicide for foliar disease management in corn. The calculator will help calculate the potential return on investment (ROI) for corn fungicide application across a variety of user-defined factors, which is based on university research data. I am showing an example of where I selected high disease severity, an expected yield of 220 bu/A and expected commodity price of $5/bu, using the already populated treatment costs per acre (Figure 4). The calculator then generates treatment cost for the various products, expected Net Benefit/A, and a breakeven probability. If you look at my selection for a field under high disease pressure the six products have a cost range of $19.38 to $37.11/A, an expected net benefit/Acre from $7.06 to $18.96 with a breakeven probability of 53.2% to 62.8%.

The treatment costs can be adjusted if a farmer knows that they can purchase them at a different cost per product, so you are able to get a more targeted result for your individual farm.

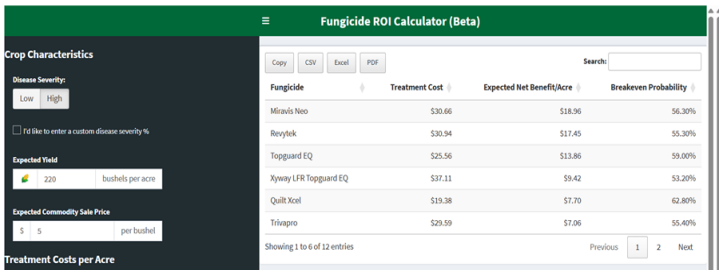


Figure 4. An example of fungicide ROI calculated for a field with high disease severity, expected yield of 220 bu/A at a commodity price of $5 per bushel using the pre-populated treatment cost.

The Crop Protection Network (CPN) website, https://cropprotectionnetwork.org/, has many additional resources from a multi-state and international collaboration of university and provincial extension specialists, and public and private professionals who provide unbiased, research-based information to farmers and agricultural personnel. The goal of CPN is to communicate relevant information that will help professionals identify and manage field crop diseases or other issues related to crop production.

Citations.

Crop Protection Network. 2024. Corn Fungicide Return On Investment Calculator. Corn Disease Working Group. Https://cropprotectionnetwork.org/fungicide-roi-calculator. Doi.org/10.31274/cpn-20240724-0.

A Growth Spurt In Hemp Production

(Marguerite Bolt, mbolt@purdue.edu)

Hemp production in the United States has experienced significant fluctuations since the passage of the 2018 Farm Bill, which removed hemp from the controlled substance list and established a national regulatory framework. The United States Department of Agriculture (USDA) published its first National Hemp Report in early 2022, providing a benchmark for the industry by capturing data from the 2021 growing season.

The reports show that harvested acreage dropped sharply after 2021, with a 45% decrease in acreage from 2021 to 2022. According to the most recent USDA data, the 2024 harvested acreage is similar to levels seen in 2021, indicating a partial rebound after the steep declines of 2022 (Fig 1).

In 2024, we saw in increase in hemp production across the United States, with 45,294 planted acres, an increase of 64% compared to the 27,680 acres planted in 2023. Despite this increase in planted acreage, the number of acres actually harvested was lower. The report does not specifically explain the gap between planted and harvested acres, but common factors likely include crop losses due to weed pressure, adverse weather events, or crops testing above the legal THC threshold of 0.3%, which would require destruction. Hemp grown for fiber and hemp grown for floral tissue accounted for the majority of harvested acres, followed by grain, seed production, and hemp grown under protection.

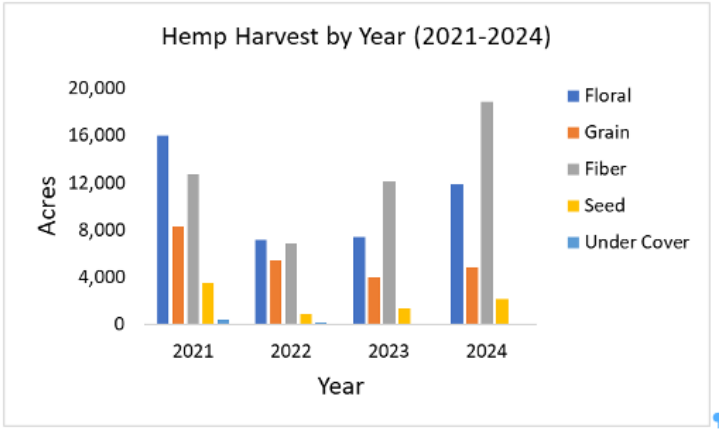


Fig 1. Harvested hemp acres 2021-2024 in the United States. Data from USDA National Hemp Reports

As the 2025 growing season gets underway, Indiana has 21 licensed hemp growers cultivating a total of 165 acres for cannabinoid production and 222 acres for grain. Currently, there are no registered acres for fiber hemp in the state. This absence is not surprising, given that Indiana lacks any operational fiber processing facilities. The nearest fiber processor is located in St. Louis, Missouri, and it remains uncertain whether a closer facility will become operational in the near future.

References

National hemp report. Cornell University. (2025, April 17). Retrieved May 8, 2025, from https://downloads.usda.library.cornell.edu/usda-esmis/files/gf06h2430/ww72d7715/4f16f032g/hempan25.pdf

Weed Management Woes In Hemp

(Marguerite Bolt, mbolt@purdue.edu)

Weeds pose a significant challenge for hemp growers. In addition to competing for water, sunlight, and nutrients, weeds also contaminant yield. The stems of weeds are considered a contaminant in hemp grown for the stalks, impacting processing. Weed seeds in the grain harvest require additional cleaning and sorting. Managing weeds in hemp is a challenge because there are fewer tools available to growers.

There is currently only one registered conventional herbicide for use in this crop. However, there may be another herbicide registered for use in the near future. Until then, Sonalan® HFP, is the only conventional option for hemp growers. Non-chemical management strategies should be considered as part of integrated weed management in hemp. These strategies could include avoiding fields with known high weed densities, stale seedbed technique, tillage and seedbed preparation, choosing vigorous hemp varieties, and equipment sanitation to minimize weed seed spread (Sosnoskie et al., 2024). Additional strategies could also include use of cover crops, though this has not been well studies in hemp.

Pre-emergent Herbicide Option

As a reminder, ethalfluralin, trade name Sonalan® HFP Herbicide (EPA Reg. No. 10163-356), was registered for use in hemp back in 2023. It is used for the control of annual grasses and broadleaf weeds. This product can be applied before planting or after planting but before crop emergence. The product needs to be incorporated mechanically or with

irrigation or rain. In a recent study on application method in hemp, there was greater control of grasses when Sonalan® HFP was pre-plant incorporated compared to post-plant preemergent application where both methods received 0.5 inches of irrigation water (Sosnoskie et al., 2024). However, June and July were particularly dry months at the study location, which could have been the reason the incorporated application provided better control of the grasses. Soils that are wet and subject to prolonged flooding can also impact the efficacy of the product. Because Sonalan® HFP has not been tested on all hemp varieties or on all soil types, it is recommended to test the product on a small area first. Injury to the crop could include, stubby roots, swollen stem bases, and stunted plants (Sosnoskie et al., 2024).

The herbicide is applied at a rate of 1.5-3 pints per acre, but will depend on soil type. Lower rates should be used in coarse soils. Applicants need to have the supplemental label when applying this product. The supplemental label can be found here, which expires May 1st, 2026. When using a supplemental label, all applicable directions, restrictions, and precautions on the container label must be followed. The label is the law!

Reference

Sosnoskie, L. M., Bohrer, M., Thomas, A., & Petzoldt, J. (2024). 2024 *Weed Science Hemp Field Day handout*. Cornell Hemp. https://bpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/a/7491/files/2024/09/2024-Weed-Science-Hemp-Field-Day-Handout.pdf

Some Dryness Over Next New Weeks

(Beth Hall)

Southern Indiana took the lion's share of precipitation in April with some locations getting over twice the amount of rain than normal for that month. Northern Indiana was a bit drier with amounts ranging from half of what is typical for April to near normal. However, since May began, conditions have been drying out throughout central, west-central, and far northwest Indiana. While there has been continued hope that Indiana could finally be free of not only drought but even 'Abnormally Dry (D0)' conditions, alas that D0 area persists and has started to expand (Figure 1).

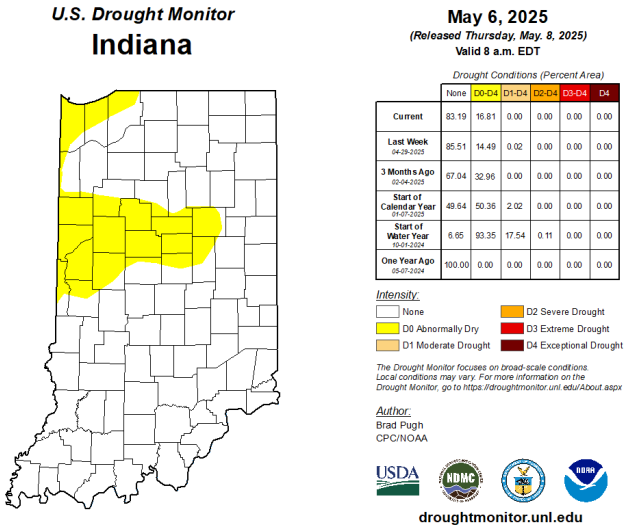


Figure 1. U.S. Drought Monitor status for conditions as of Tuesday, May 6, 2025.

April temperatures were near normal in most locations with slightly above-normal values (by 1-3 degrees) in the southwestern quadrant of the state. May has started slightly cooler than normal in southern and northwestern counties with the rest of the state mostly near normal. However, when considering temperature with respect to modified growing degree day accumulations since April 15th, conditions have been slightly above normal, particularly in the central and eastern parts of the state (Figures 2 and 3).

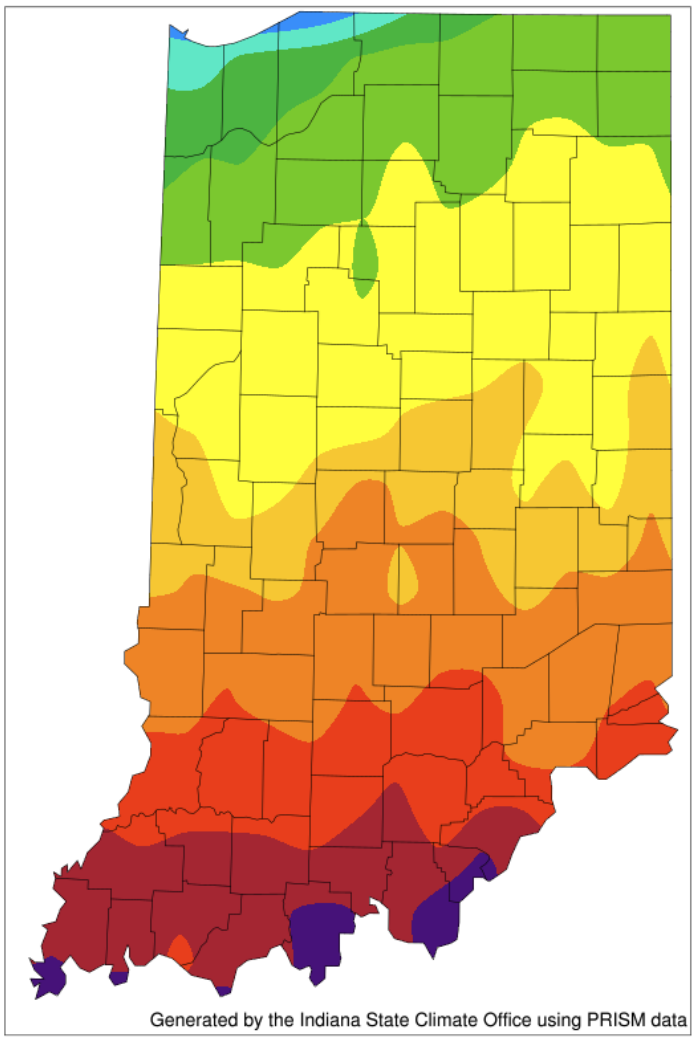


Figure 2. Modified growing degree day (50°F / 86°F) accumulation from April 15 – May 7, 2025.

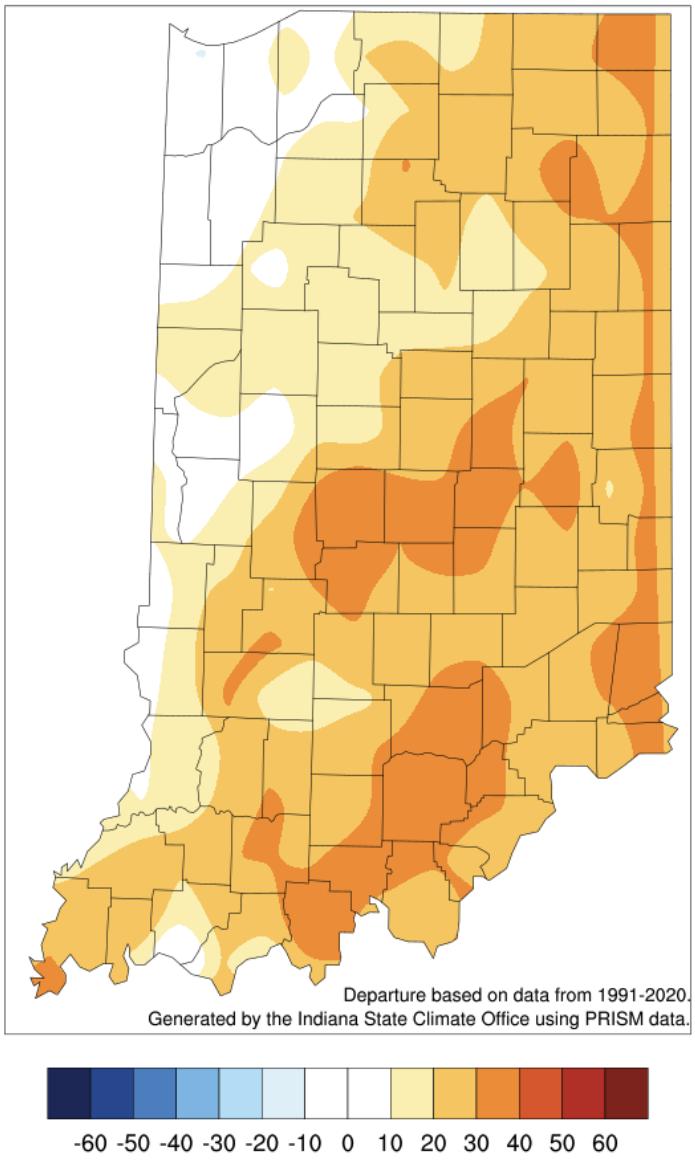


Figure 3. Modified growing degree day (50°F / 86°F) accumulation from April 15-May 7, 2025, represented as the departure from the 1991-2020 climatological average.

Climate outlooks over the next 6-14 days (May 13-21) are strongly favoring above-normal temperature and slightly favoring near-normal (early in that period) to above-normal (later in that period) precipitation. Therefore, it is quite likely that Indiana has already seen its last hard freeze of the season so we can look forward to lots of lawn mowing, allergies, and insects from here on out. Additionally, with temperatures rising, evapotranspiration rates will start to rapidly increase, drying out surface moisture if only a little precipitation falls. The national Climate Prediction Center released its updated monthly outlook for May on April 30th. At that time, models were favoring above-normal temperatures and slightly favoring below-normal precipitation. The next monthly and seasonal climate outlooks will be released next Thursday, April 15th.

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