PURDUE UNIVERSITY | Extension - Entomology

Pest&Crop newsletter

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In This Issue

Western Bean Cutworm: Kernel Feeding Is Only Part Of The Damage

(Christian Krupke) & *(John Obermeyer)*

It's western bean cutworm season – as discussed in last week's *Pest&Crop*, moth trap counts are peaking, primarily in Indiana's northern counties. Control of this pest with Bt corn traits is difficult, as it has evolved resistance to one of the toxins present in most traited corn, Cry1F, the endotoxin for above-ground feeding caterpillars. This includes SmartStax varieties and Optimum AcreMax hybrids, among others. In terms of Bt hybrids, only those expressing the *Vip* protein will offer control of this pest – this is something to keep in mind when ordering seed for 2022. Other than that, field scouting and well-timed insecticide applications are your only options for WBC management, and those options do work well.

Losing kernels to western bean cutworm feeding is only a part of the story. (*Photo Credit: John Obermeyer*)

In areas where eggs are laid in abundance, some caterpillars will get through even the best-timed insecticide application. Although the direct damage the caterpillar causes by feeding is not insignificant, it is often the secondary concern. The real problems start because the damaged ear is predisposed to fungal pathogens that may lead to ear rots, e.g., Gibberella. The caterpillars don't vector the pathogen directly, but they open up the ear/kernels and make the environment more favorable for potential disease development. These fungal diseases may produce toxins that are highly toxic to livestock (particularly swine) and elevated levels of these toxins can result in dockage at grain elevators. This highlights how important the next few days are for ramping up scouting efforts to correctly time insecticide applications when needed. This before they get into the safety of protected areas, the ear itself. Happy scouting!

Neonicotinoid Seed-Applied Insecticides In The News…Again

(Christian Krupke) & *(John Obermeyer)*

Corn and soybean growers are very familiar with neonicotinoid seed treatments, and some of the debates that surround their use – including examining their yield benefits and the potential for off-target negative effects. Almost all corn and most soybeans are treated with neonicotinoid insecticides, and they've been widely adopted for approximately 15 years or so. Revisiting this, or any agricultural practice, from time to time is a useful exercise.

How can such little insecticide per kernel make such a big fuss? Read All About It! (*Photo Credit: John Obermeyer*)

Recently, an article by Emily Unglesbee in Progressive Farmer, summarized various elements of the debate – ranging from registration

and regulatory oversight, to efficacy against pests in the field and some emerging new non-target concerns:

https://www.dtnpf.com/agriculture/web/ag/crops/article/2021/07/13/seed-treatment-overload-unintended

Here is a perspective on the issue from DTN editor-in-chief:

https://www.dtnpf.com/agriculture/web/ag/blogs/editors-notebook/blog-post/2021/07/13/treated-seed-troubling-times

And a response to the original article from the American Seed Trade Association:

https://www.dtnpf.com/agriculture/web/ag/columns/letters-to-the-editor/article/2021/07/22/asta-response-seed-treatment-article

It's a lot of reading! But it is worth a look if you're at all interested in informing yourself about the various questions surrounding the dominant insect pest management approach in field crops.

2021 Western Bean Cutworm Pheromone Trap Report

(John Obermeyer)

		WBC Trapped						
		Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7
		6/17/21-	6/24/21-	7/1/21-	7/8/21-	7/15/21-	7/22/21-	7/29/21-
County	Cooperator	6/23/21	6/30/21	7/7/21	7/14/21	7/21/21	7/28/21	8/4/21
Adams	Roe/Mercer Landmark	0	0	0	1	0	0	
Allen	Anderson/NICK	0	0	0	2	7	3	
Allen	Gynn/Southwind Farms	0	0	0	0	2	0	
Allen	Kneubuhler/G&K Concepts	0	0	0	0	2		
Bartholomew	Bush/Pioneer Hybrids	0	0	0	0	0		
Boone	Emanuel/Boone Co. CES	0	0	0	0	0	1	
Clay	Mace/Ceres Solutions/Brazil	0	0	0	0	0	0	
Clay	Fritz/Ceres Solutions/Clay City	0	0	0	0	0	0	
Clinton	Emanuel/Boone Co. CES	0	0	1	1	0	0	
Dubois	Eck/Dubois Co. CES	0	0	0	0	0	0	
Elkhart	Kauffman/Crop Tech Inc.	0	0	2	6	6	1	
Fayette	Schelle/Falmouth Farm Supply Inc.	0	0	0	0	0	0	
Fountain	Mroczkiewicz/Syngenta	1	1	8	13	0	0	
Hamilton	Campbell/Beck's Hybrids	0	0	0	0	0	0	
Hancock	Gordon/Koppert Biological Systems	0	0	0				
Hendricks	Nicholson/Nicholson Consulting	0	0	0	0	0		
Hendricks	Tucker/Bayer	0	0	0				
Howard	Shanks/Clinton Co. CES	0	0	0	0	3	0	
Jasper	Overstreet/Jasper Co. CES	0	2	6	22	81	10	
Jasper	Ritter/Dairyland Seeds	0	2	68	104	62		
Jay	Boyer/Davis PAC	0	0	0	0	0	0	
Jay	Liechty/G&K Concepts	0	0	0	0	0		
Jay	Shrack/Ran-Del Agri Services	0	0	0	0	0	0	
Jennings	Bauerle/SEPAC	0	0	0	0	0	0	
Knox	Clinkenbeard/Ceres Solutions/Freelandville	0	0	0	0	0	0	
Kosciusko	Jenkins/Ceres Solutions/Mentone	3	0	30	53	109	47	
Lake	Kleine/Rose Acre Farms	0	0	1	1	2	10	
Lake	Moyer/Dekalb Hybrids/Shelby	0	2	9	55	79	8	
Lake	Moyer/Dekalb Hybrids/Scheider	0	1	13	63	78	11	
LaPorte	Rocke/Agri-Mgmt. Solutions	1	1	16	55	30	38	
Marshall	Harrell/Harrell Ag Services	0	1	5	14	24		
Miami	Early/Pioneer Hybrids	0	1	10	41	31	9	
Montgomery	Delp/Nicholson Consulting	0	0	0	0	0	0	
Newton	Moyer/Dekalb Hybrids/Lake Village	0	0	19	27	52	6	
Porter	Tragesser/PPAC	0	1	1	7	5	4	
Posey	Schmiltz/Posey Co. CES	0	0	0	0	0		
Pulaski	Capouch/M&R Ag Services/Medaryville	1	0	0	5	89	9	
Pulaski	Leman/Ceres Solutions	1	0	4	23	10		
Putnam	Nicholson/Nicholson Consulting	0	1	0	0	0	0	
Randolph	Boyer/DPAC	0	0	0	0	0	0	
Rush	Schelle/Falmouth Farm Supply Inc.	0	0	0	0	0	0	
Shelby	Fisher/Shelby County Coop	0	0	0	0	0		
Starke	Capouch/M&R Ag Services/Monterey	3	4	42	71	56	5	
Starke	Capouch/M&R Ag Services, San Pierre	3	0	17	26	25	3	
St. Joseph	Carbiener/Breman	0	0	2	4	11		
St. Joseph	Deutscher/Helena Agri-Enterprises, Trap 1	0	0	0	3	5	10	
St. Joseph	Deutscher/Helena Agri-Enterprises, Trap 2	0	0	0	2	16	21	
Sullivan	McCullough/Ceres Solutions/Farmersburg	9	0	0	0	0	0	
Tippecanoe	Bower/Ceres Solutions	2	6	60	15	27	0	
Tippecanoe	Nagel/Ceres Solutions	0	0	0	0	0	0	
Tippecanoe	Obermeyer/Purdue Entomology	0	1	0	4	3	1	
Tippecanoe	Westerfeld/Bayer Research Farm	0	0	0	0	2	0	
Tipton	Campbell/Beck's Hybrids	0	0	0	0	0	3	
Vermillion	Lynch/Ceres Solutions/Clinton	0	0	0	0	0	0	
White	Foley/ConAgra	0	1	0	3	3	0	
Whitley	Boyer/NEPAC/Schrader	0	1	3	2	0	0	
Whitley	Boyer/NEPAC/Kyler	0	1	1	2	0	0	

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

Indiana Disease Update In Corn

(Darcy Telenko)

Corn

Tar Spot – We continue to confirm counties with active tar spot. Seventeen counties have been confirmed as of July 29, 2021. These counties all had a previous history: Lake (suspect), Porter, LaPorte, St. Joseph, Elkhart, LaGrange, Noble, Jasper, Pulaski, Fulton, White, Cass, Miami, Tipton, Hamilton, Fountain, Vermillion, Knox (Figure 1). Gray colored counties on the map are those we have found tar spot in previous years. In northern Indiana, we are starting to find multiple fields with tar spot beginning to move up in the canopy and increased severity on the leaves. Please keep a close eye on your fields. Our research in 2019 and 2020 found that a well-timed fungicide application up to R3 will help reduced disease and protect yield. In 2019 and 2020 (Figures 2 and 3), fungicide applied at tassel/silk (VT/R1), blister (R2) or V7 followed by VT/R1 resulted in the lowest amount of disease develop in the crop canopy in both years.

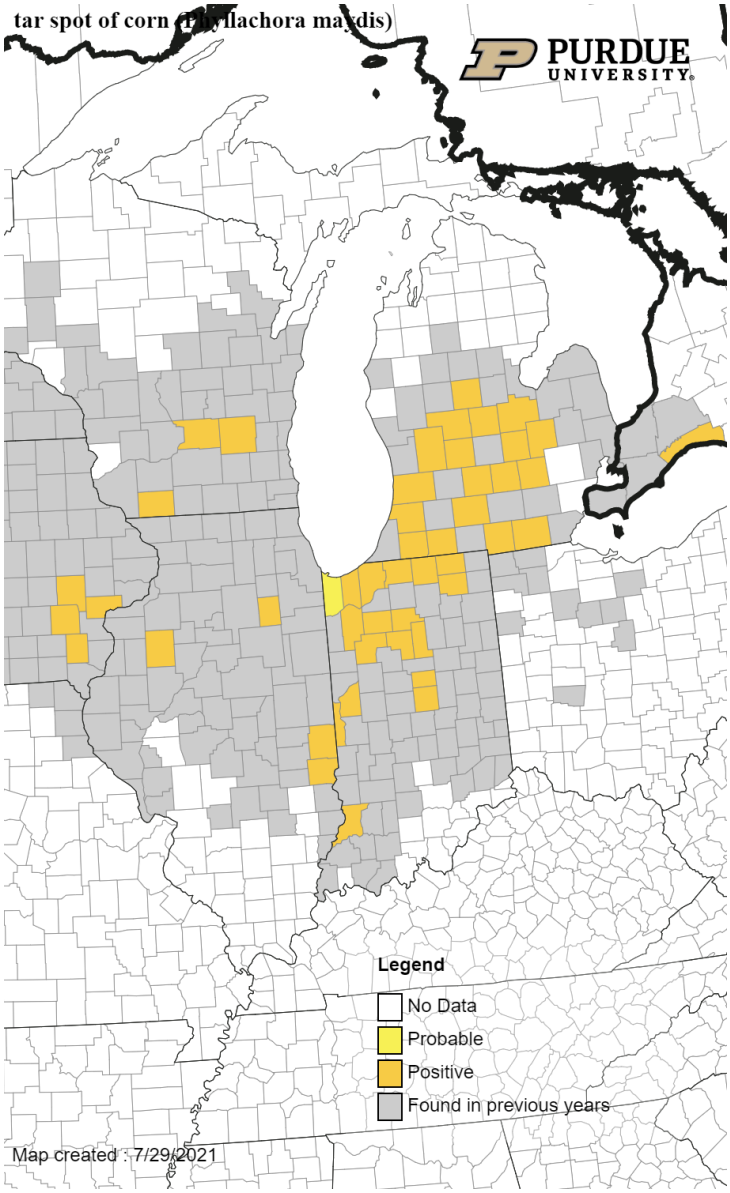

Figure 1. Tar spot map on July 29, 2021.

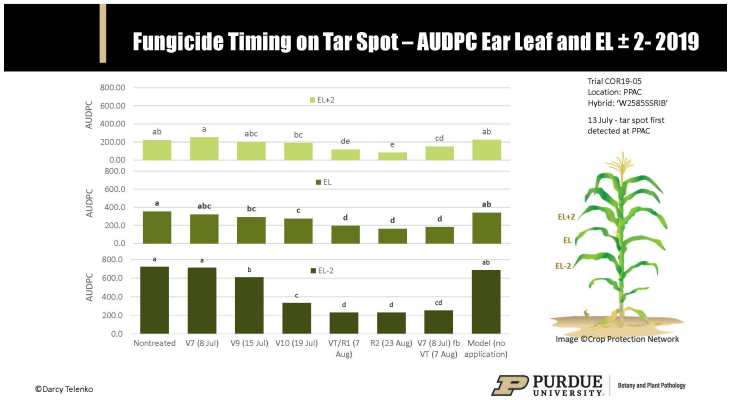

Figure 2. Effect of fungicide timing on the development of tar spot on the ear leaf (EL) and the two leaves above and below the ear leaf (EL±2). Timing treatments included V7, V9, V10, tassel/silk (VT/R1), blister (R2), and a two-fungicide application program made at V7 followed by VT. AUDPC = by area under disease progress curve. Tar spot first detected in trial on 13 July.

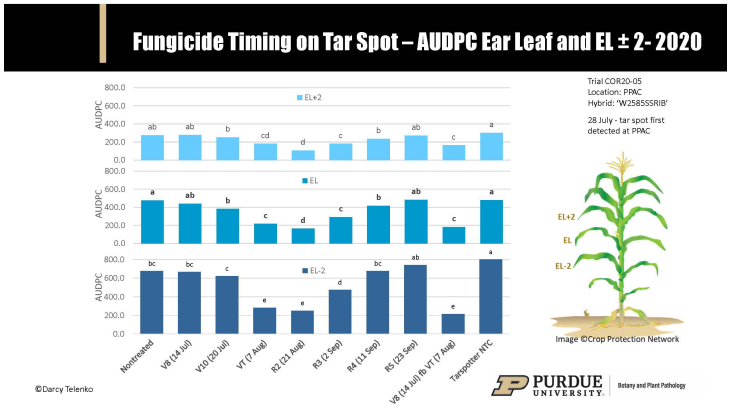

Figure 3. Effect of fungicide timing on the development of tar spot on the ear leaf (EL) and the two leaves above and below the ear leaf (EL±2). Timing treatments included V8, V10, tassel/silk (VT/R1), blister (R2), milk (R3), dough (R4), dent (R5), and a two-fungicide application program made at V8 followed by VT. AUDPC = by area under disease progress curve. Tar spot first detected in trial on 28 July.

Southern Corn Rust. We continued to add new counties this week to the **southern rust** map in Indiana. There are now 10 counties confirmed including a pocked in west central Indiana (figure 4). These include Gibson, Knox, Daviess, Orange, Harrison, Pulaski, Fulton, White, Carroll, Tippecanoe counties. Keep scouting and if you suspect it, please send a sample to the Purdue Plant Pest Diagnostic Lab (PPDL). Southern rust can cause significant yield loss if it builds up to high levels during silking and corn fill. Therefore, it is very important to keep a close eye out for this disease this season to make timely management decisions.

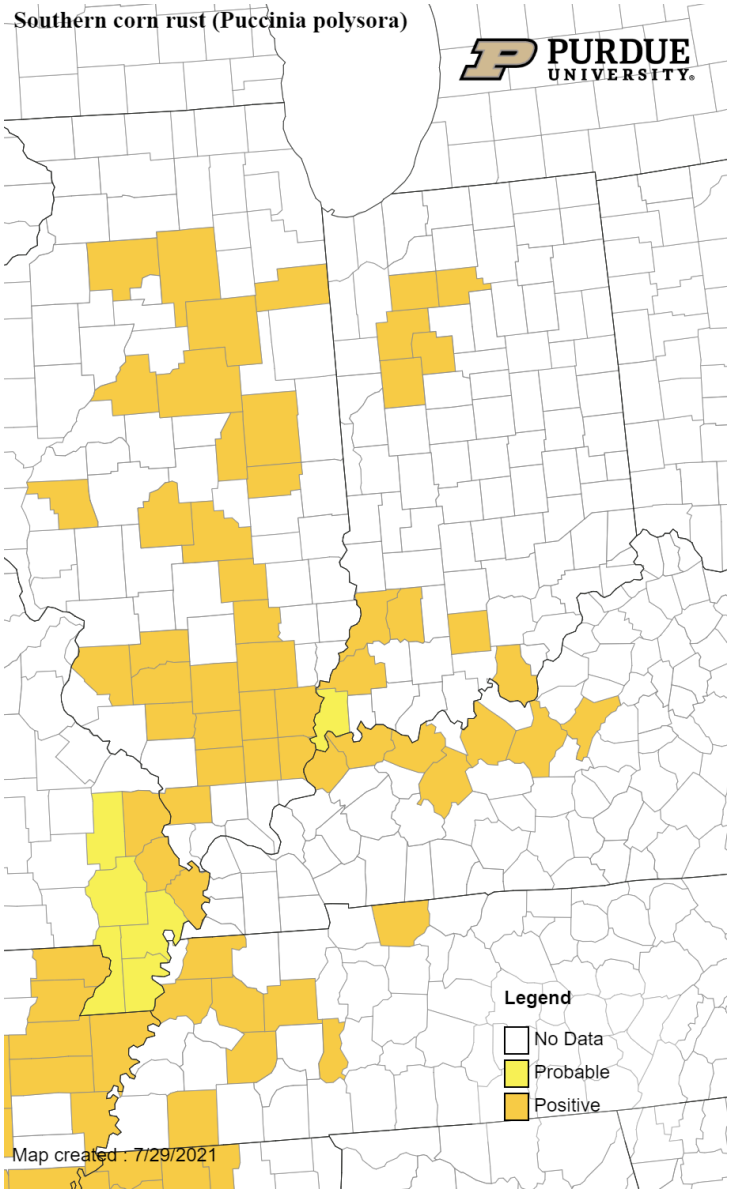

Figure 4. Southern corn rust map for July 29, 2021.

We again are requesting if you have any suspect locations to please update us and send a sample for both tar spot and southern corn rust. I am especially interested in those counties we have yet to scout or receive a sample. Even if your county is yellow, I am also interested in learning if you have tar spot or southern rust on your farm and what you might be seeing – feel free to send me an email/photo at dtelenko@purdue.edu or call 765-496-5168.

Take Time to Evaluate Yield, Quality, Resistance, Persistence When Selecting Forage Varieties

(Keith Johnson)

Many times I get frustrated when I go to the grocery store. The task seems simple enough; purchase a can of beans. The problem for me as I stare up and down the bean shelf is there are too many darn bean choices. Some are no spice, low spice, medium spice, or hot spice. Some are white beans, red beans, black beans or brown beans. Beans are labeled by Company A through Company G. Some are higher price,

moderate price or lower price. The beans are canned, in glass, or in a plastic bag. After complete evaluation, I make my decision on what bean type I am going to buy after too much valuable time has passed. Then, I need to move up the aisle and do the same thing with corn and carrots.

I hope you take more time evaluating what forage species and variety of that species should be purchased than the time taken to buy a vegetable at the grocery store. I perceive that way too often a person walks into a farm store and purchases an inferior forage variety because they don't start the evaluation process soon enough and the top varieties have already been sold, they are novices and don't realize that there are variety choices within a forage species, or the farm store employee is not fully informed on the differences among species and varieties.

I encourage you to get seed ordered now if you have perennial forages to seed in the next month. Do not wait until the week before seeding to start the process. I understand that the seed harvest in the Willamette Valley in Oregon where much cool-season grass seed production occurs has not had a stellar year with grass seed production. For those of you planning on seeding cover crops this fall and forages next spring, begin the species and seed selection process sooner than later.

What considerations should be made when selecting a forage variety?

- **Seed source** – Select a seed company that has personnel that understands the product they have to sell and can give specific information about forage species and species within a variety.
- **Named variety** – Select a named variety and not one with "Variety Not Stated" or "VNS" on the seed tag. The genetic attributes of unnamed varieties are not known.
- **Yield** – See if yield data is available for performance comparisons among varieties. Put more trust in true yield differences among varieties when statistical analysis has been done and are part of the data tables.
- **Seed Quality** – Be aware of germination and purity of the seed before it is purchased. Low germination, high hard seed count in legumes, and low purity seed are not desired. Note whether there are weed seed and other crop seed with the desired forage seed species. The following link provides useful information about reading seed tags. https://extension.purdue.edu/extmedia/AY/AY-375-W.pdf
- **Forage Quality** – Less likely to be found than yield data, but consider selecting a sorghum-sudangrass or pearl millet with the brown midrib trait for improved digestibility. Less lignin alfalfa varieties are now available, too.
- **Resistance** – Diseases that are problematic in your area should be considered when selecting varieties. Genetic resistance to diseases is an important step in reducing yield and forage quality losses, and improving persistence of the forage. Potato leafhopper resistant alfalfa varieties are available to lessen damage caused by this sap-sucking insect. Orchardgrass leaf diseases can be reduced by selecting varieties with high resistance.
- **Persistence** – Perennial forage varieties that are economically sustainable through many seasons are preferred to short-lived ones.

Excellent management skills are necessary to exploit the value of improved varieties. Use "Best Management Practices" as it relates to soil fertility, seeding date, seeding rate, harvest date, grazing intensity, and scouting to get the most from purchased varieties.

Take time to select forage species and variety choices. It has more value than selecting a bean type in the grocery store!

Spending more time evaluating the right forage variety for purchase has more value than selecting the right bean on the grocery shelf. (*Photo Credit: Keith Johnson*)

Purdue Crop Chat Episode 22, Crop Update And A Check On Disease

(Shaun Casteel) & *(Dan Quinn)*

On this Purdue Crop Chat Podcast, Purdue Extension Soybean Specialist Shaun Casteel and Corn Specialist Dan Quinn are joined by Darcy Telenko, Purdue Field Crop Extension Plant Pathologist, to discuss diseases that are popping up around the state in both corn and soybeans.

The guys pepper Telenko with many questions like how many fungicide applications should farmers make and what timing is best for those applications.

In the podcast, Telenko references specific tools that farmers can use. Those tools are listed below:

Tarspotter App and Sporecaster App both available on Android and Apple

Telenko's website with the maps:
https://extension.purdue.edu/fieldcroppathology/

Efficacy charts for corn and soybeans:

https://cropprotectionnetwork.org/resources/publications/fungicide-efficacy-for-control-of-corn-diseases

https://cropprotectionnetwork.org/resources/publications/fungicide-efficacy-for-control-of-soybean-foliar-diseases

Current Corn Crop Condition Bodes Well For Good Yields This Fall

(Bob Nielsen)

The condition of the 2021 Indiana corn crop, as estimated weekly by USDA-NASS, ranks among the top 6 most recent growing seasons dating back to 2004. The accompanying graph illustrates the percentage of the state's corn crop rated as 'good' to 'excellent' through Sunday, July 25. Also depicted are the five most recent years with similarly 'good' to 'excellent' crop conditions.

Departures from trend grain yield in those five years ranged from +2.6% (2016) to +13.9% (2014). The trend grain yield (aka expected yield for an 'average' year) for Indiana corn in 2021 would be 177.3 bushels per acre (based on simple linear regression of grain yield versus year since 1956, R-square = 0.81). If crop condition remains at its current level for the remainder of the growing season, my analysis of historical relationships between grain yield and season-long crop condition ratings from 1986-2020 suggests that this year's corn grain yield potential might be +7% to +8% above trend yield (approximately 190 bushels per acre).

Of course, the range in grain yield departures shown by the 5 recent years with similar crop conditions (accompanying graph) reinforces the fact that such analyses of historical data have their margins of error. Nevertheless, the 2021 Indiana corn crop is on track for excellent grain yields at harvest this fall.

Reference:

USDA-NASS. 2021. Crop Progress. USDA Economics, Statistics and Market Information System. https://usda.library.cornell.edu/concern/publications/8336h188j [URL accessed 7/28/2021].

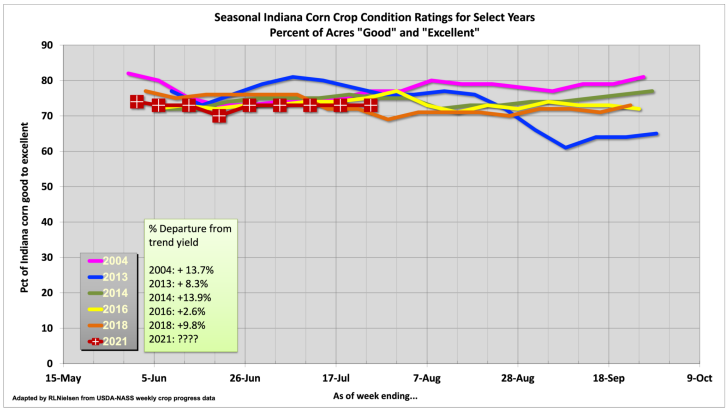

Figure 1. Seasonal Indiana Corn Crop Condition Ratings for Select Years. Adapted from USDA-NASS weekly crop progress data.

Multiple Diseases Found On Hemp

(Marguerite Bolt, mbolt@purdue.edu)

The heavy rain events and somewhat cooler temperatures prior to this week's heatwave increased disease pressure in hemp. This will be the first growing season we have observed downy mildew on hemp at Meigs farm. It was identified in the cannabinoid cultivar trial on many cultivars.

Downy mildew thrives when temperatures are cooler, there is high humidity, and free water.

Growers should look for greenish-yellow, water-soaked lesions on the tops of leaves. These lesions will progress and turn brown. A gray to black fuzzy appearance can be observed on the underside of leaves where the lesions are. Growers should avoid scouting in the early morning or after rain. Remove leaves with downy mildew can and place in a paper bag. Avoid leaving infected plant tissue on the ground. This will reduce inoculum for the following growing season.

It is unclear the economic impact of downy mildew in hemp. However, this pathogen can be devastating in other crops.

White mold was also found in the cultivar trial at Meigs farm. Day-neutral cultivars were the most affected, likely due to early flowering and dense floral structures. Growers should look for browning on the leaves and the floral tissue. A fluffy white appearance (mycelial growth) is found along the stem. We also observed black overwintering structures (sclerotia) on the stem.

There are several fungicides available for hemp growers in Indiana. While there are quite a few products registered through EPA, not all of them are registered in Indiana. Products need to include hemp on the label or supplemental label to be used. Growers can find the list of products can at https://www.oisc.purdue.edu/pesticide/pdf/pest_hemp_product_list.pdf. Supplemental labels can be found at https://www.oisc.purdue.edu/pesticide/index.html under the Pesticide Use in Hemp section.

Downy mildew lesions on upper surface of hemp leaf.

Underside of lesions.

White mold with sclerotia on hemp stem.

Browning of tissue caused by white mold.

Early August Predicted To Be Cooler And Drier Than Normal

(Beth Hall)

After three consecutive weeks of Indiana being drought free according to the US Drought Monitor, it looks like next month is favored to be drier than normal and cooler than normal. That does not necessarily imply drought is expected to return since rain events may still occur. However, the predicted amounts of rain are low, so there could be some drying. However, with below-normal temperatures in those climate outlooks, several benefits may come. First, the rate of evaporation of any moisture across the state could be lower, and second, conditions should feel more pleasant when outside. However, a drier atmosphere will also encourage evaporation, so this may offset any reduced impact from the lower temperatures and Indiana may see some impacts from the drier atmosphere. The good news is the second week in August is favored to near-normal precipitation along with above-normal temperature. Therefore, enjoy next week outside as much as you can since the warm and muggy conditions so common this time of year are expected to return.

Modified growing degree-day accumulations range from 1600 units in northern Indiana to nearly 2200 units in southern Indiana (Figure 1). The southern part of the state is still slightly behind the climatological average with the northern counties slightly ahead (Figure 2). The bullseyes of above-normal MGDD departures in northern Tippecanoe county and between Madison and Delaware counties may be due to erroneous data. Further investigations are needed.

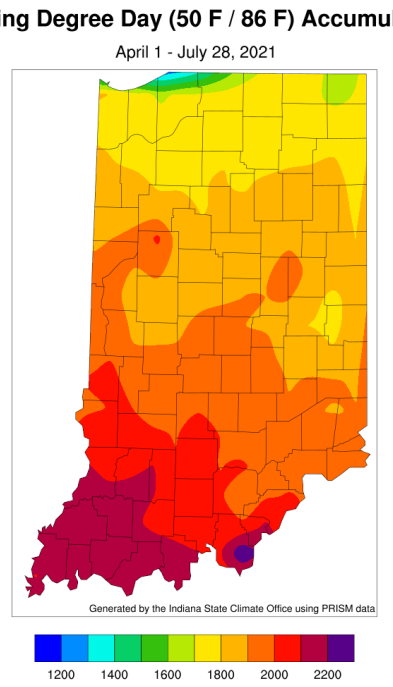

Figure 1. Modified growing degree day accumulations from April 1 to July 28, 2021.

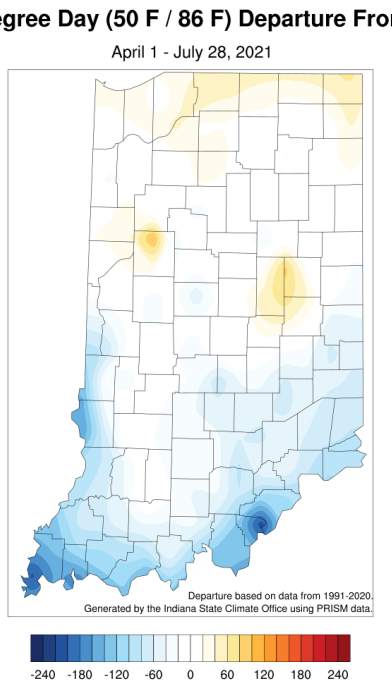

Figure 2. Modified growing degree day accumulation departures from the 1991-2020 climatology from April 1 to July 21, 2021.

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