

Pest & Crop newsletter

Purdue Cooperative Extension Service and USDA-NIFA Extension IPM Grant

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Potato Leafhopper Resistant Alfalfa Varieties Need Help!

(John Obermeyer)

In most years, with highly resistant potato leafhopper alfalfa varieties, management of this pest with insecticides usually isn't needed. This year is an exception, as leafhopper numbers are very high, see last week's article.

Resistance (really tolerance), comes from physical characteristics, i.e., glandular hairs, bred into commercially available varieties. These glandular hairs ooze tiny droplets of a sticky material that trap and/or impede the adult and immature leafhopper movement. These tiny droplets may also affect them by reducing their rate of feeding and egg production. In years with low to moderate potato leafhopper numbers, the highly resistant varieties (70% or greater glandular hair expression) stay green. Meaning, leafhopper numbers stay below treatment thresholds and hopper-burn/yield loss is negligible.

However, scouting for potato leafhopper is still necessary with resistant/tolerant varieties. To assess leafhopper populations and the potential for damage, take at least 5 sets of 20 sweeps with a 15" diameter sweep net in representative areas of a field. Carefully examine the contents of the sweep net, count the number of adults and nymphs, and calculate the number of leafhoppers per sweep. Research at Iowa State University has shown that treatment thresholds for tolerant cultivars are nearly 10 times the number of potato leafhopper to traditional alfalfa, see below.

Management Thresholds for Potato Leafhopper

Average Number of Leafhoppers (Adults/Nymphs) Per Sweep		
Stem Height (Inches)	Traditional Alfalfa	Tolerant Alfalfa
Under 3	0.2	2.0
4-6	0.5	5.0
7-12	1.0	8.0
Greater than 12	1.5	15.0



Plots of a potato leafhopper susceptible (left) versus tolerant (right) showing differences in hopper-burn. Taken June 24, 2020.



Glandular hairs, next to pin point, of potato leafhopper resistant varieties.

Armyworm, What's Next?

(John Obermeyer)

Still this week, dairy producers in extreme northern counties were losing forage grasses in their hay fields from armyworm. Unfortunately, by the time it was realized, the armyworms were already moving across roads in a desperate attempt to find/denude more grasses. By this time, treatments are ill-advised even if the worms are still in the field, as larvae greater than 1.25" are very difficult to control and their feeding

is nearly complete. Producers spraying wheat in northeastern counties found this out recently, as last-ditch attempts were made to protect the flag leaves and heads from these ravenous, large-worms. The armyworm kept marching on.

Now the current question, will the armyworm be back this summer? Moths, from the first-generation larvae, are flying again. Female moths, laden with eggs, are attracted to lush, dense grasses for deposition. This could be well managed forage grasses or something as small as a patch of ornamental grass in a yard. A handful of times over the years, we have been sent pictures of “back 40” cornfields, planted very late that were completely denuded in late June. A surprise to the neglectful producer! Because of the high moth numbers this spring, the possibility of uncharacteristic, late-damage from armyworm exists this season. The good news is that armyworm larvae are very susceptible to fungal pathogens. Therefore, Mother Nature will probably take care of this pest for the rest of the year. Happy Scouting!



July armyworm defoliated corn with remains of grassy weeds.

Western Bean Cutworm Moth Season Begins

(John Obermeyer)

Pheromone trapping began for western bean cutworm moths this past week. Though not initially impressive, see “Western Bean Cutworm Pheromone Trap Report,” 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 western bean cutworm history, should be gearing up for field scouting of corn, even those with Bt-traits.

Remember that WBC larvae are no longer susceptible to most of the Bt traits in our corn hybrids (including those in SmartStax hybrids) and therefore scouting, followed by timely insecticide sprays are really the only reliable control option for the vast majority of producers that are in the zone 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.



Two captured western bean cutworm moths in the bottom of a bucket trap.

2020 Western Bean Cutworm Pheromone Trap Report

(John Obermeyer)

		WBC Trapped							
		Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	
		6/18/20-	6/25/20-	7/2/20-	7/9/20-	7/16/20-	7/23/20-	7/30/20-	
		6/24/20	7/1/20	7/8/20	7/15/20	7/22/20	7/29/20	8/5/20	
County	Cooperator								
Adams	Roe/Mercer Landmark	0							
Allen	Anderson/NICK	0							
Allen	Gynn/Southwind Farms	0							
Allen	Kneubuhler/G&K Concepts	0							
Bartholomew	Bush/Pioneer Hybrids	0							
Boone	Emanuel/Boone Co. CES	2							
Clay	Marc/Ceres Solutions/Brazil	0							
Clay	Fritz/Ceres Solutions/Clay City	0							
Clinton	Emanuel/Boone Co. CES	0							
Dubois	Eck/Dubois Co. CES	0							
Elkhart	Kaufman/Crop Tech Inc.	0							
Fayette	Schelle/Falmouth Farm Supply Inc.	0							
Fountain	Mroczkiewicz/Syngenta	0							
Fulton	Jenkins/Ceres Solutions/Talma	0							
Hamilton	Campbell/Beck's Hybrids	0							
Hendricks	Nicholson/Nicholson Consulting	0							
Hendricks	Tucker/Bayer	1							
Howard	Shanks/Clinton Co. CES	0							
Jasper	Overstreet/Jasper Co. CES	0							
Jasper	Ritter/Dairyland Seeds	3							
Jay	Boyer/Davis PAC	0							
Jay	Shrack/Ran-Del Agri Services	0							
Jennings	Bauer/SEPAC	0							
Knox	Clintkenbeard/Ceres Solutions/Freelandville	0							
Knox	Butler/Ceres Solutions/Vincennes	0							
Lake	Kleine/Rose Acre Farms	0							
Lake	Moyer/Dekalb Hybrids/Shelby	0							
Lake	Moyer/Dekalb Hybrids/Scheider	0							
LaPorte	Rocke/Agri-Mgmt. Solutions	0							
Marshall	Harrell/Harrell Ag Services	0							
Miami	Early/Pioneer Hybrids	0							
Montgomery	Delp/Nicholson Consulting	0							
Newton	Moyer/Dekalb Hybrids/Lake Village	0							
Porter	Trageser/PPAC	1							
Posey	Schmitz/Posey Co. CES	0							
Pulaski	Capouch/M&R Ag Services	1							
Pulaski	Leman/Ceres Solutions	0							
Putnam	Nicholson/Nicholson Consulting	0							
Randolph	Boyer/DPAC	0							
Rush	Schelle/Falmouth Farm Supply Inc.	2							
Simpson	Simpson/Simpson Farms	0							
Starke	Capouch/M&R Ag Services	1							
St. Joseph	Battles/Mishawaka	0							
St. Joseph	Carbriener/Breman	0							
St. Joseph	Deutscher/Helena Agri-Enterprises, Trap 1	0							
St. Joseph	Deutscher/Helena Agri-Enterprises, Trap 2	0							
Sullivan	Baxley/Ceres Solutions/New Lebanon	0							
Sullivan	McCullough/Ceres Solutions/Farmersburg	0							
Tippecanoe	Bower/Ceres Solutions	0							
Tippecanoe	Nagel/Ceres Solutions	0							
Tippecanoe	Obermeyer/Purdue Entomology	0							
Tippecanoe	Westerfield/Monsanto Research Farm	0							
Tipton	Campbell/Beck's Hybrids	0							
Vermillion	Lynch/Ceres Solutions/Clinton	0							
White	Foley/ConAgra	0							
Whitley	Boyer, Richards/NEPAC/Schrader	0							
Whitley	Boyer, Richards/NEPAC/Kyler	0							

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

Weed Management Update For Late June

(Bill Johnson) & (Marcelo Zimmer)

Our newsletter topics for this week will be a general update of some of the issues that have crossed our desk over the last week. As we move into this time of the year, weed control operations in corn are mostly complete. Weed control operations in soybeans are still ongoing with many folks putting on the first and second postemergence treatments. In wheat, we are harvesting and deciding whether or not to put out a preharvest treatment to help with harvest operations, and deciding whether or not to do a burndown in fields that will be double cropped to soybean. Hay field and pasture weed control operations during this

time of year consist primarily of treating for thistles if they're in the bud stage, or thinning out broadleaf weeds right after a cutting for hay, or if labor is available, doing stump treatments for tree or multiflora rose control.

HPPD carryover to soybean

The herbicide carryover situation is driven mostly by the weather we had in 2019. Last year we had a wet spring and a very late average planting date for the main agronomic crops grown in the state. In addition, July and August rainfall was sparse well below 30 year averages. Late planting dates and sparse rainfall late in the growing season is the perfect setup for carryover of herbicides that typically have nine month or longer rotational restrictions. We are seeing carryover with a couple of group #27 herbicides which include isoxaflutole (Balance), mesotrione (Callisto and others), and topramezone (Impact/Armezon). However, most of the cases involve mesotrione. The symptoms of this type of injury include bleaching (chlorosis) of newer leaves and growing point, narrower soybean leaves that are also smaller than normal, and overall stunted growth (Figure 1).



Figure 1. Mesotrione carryover to soybeans (Photo Credit: Marcelo Zimmer).

Isolated instances of poor waterhemp control with dicamba in soybean.

In 2019 we had a few instances of poor waterhemp control with the dicamba herbicides labeled for use in soybean. We're currently testing a few of these populations to see how they respond to different rates and application timings. We have a few new populations that are not well controlled that have been brought to our attention again this year and we are in the process of collecting seed or soil from these areas. We do not have the capability of doing commercial screening for herbicide resistance this year since we do not have Indiana Soybean Alliance funding for this service like we have had in the past. However, if you have a field that seems particularly problematic, feel free to contact Marcelo (zimmer6@purdue.edu) or myself (wgj@purdue.edu) and we might be interested in collecting some seed or soil from the field.

Video on marestail and giant ragweed burndown.

In this new covid-19 world in which we are operating, we are not able to do face-to-face training and field days. So we are experimenting with the filming of more videos to use for training and information exchange. Last week, Marcelo and I put one video together on marestail and giant ragweed control with burndown herbicides. Here is a video on Burndown Strategies for Horseweed and Giant Ragweed.

Next week we're going to work on a video about volunteer corn control in soybean.

Enlist soybeans cupped after 2,4-D application?

These questions and claims started rolling in about two weeks ago. We have worked with the Enlist soybean system in research plots for over 10 years. The only injury symptoms we have observed were leaf drooping within a few hours after application, and some necrotic spots on the leaves when we applied high rates of 2,4-D choline. We have never observed cupping that is commonly associated with dicamba exposure on Enlist soybean. If any soybeans other than Xtend varieties are showing leaf cupping, it's most likely due to dicamba. 2,4-D does not cause leaf cupping. But it does cause leaf strapping, stem twisting and callous tissue formation on soybean stems. See this publication for more details on differentiating dicamba versus 2,4-D exposure on soybeans:

<https://ag.purdue.edu/btny/weedscience/Documents/WS-56.pdf>

Early Season Drought Stress In Corn

(Bob Nielsen)

Early season dry periods are historically not that common for the Eastern Corn Belt of the U.S. Usually, farmers and agronomists complain about too much rain during stand establishment and early vegetative periods. However, at the moment, conditions throughout Indiana have become stressfully dry over the past several weeks and much of the state was rated as "abnormally dry" by the U.S. Drought Monitor ratings as of mid-June (Fig. 1).

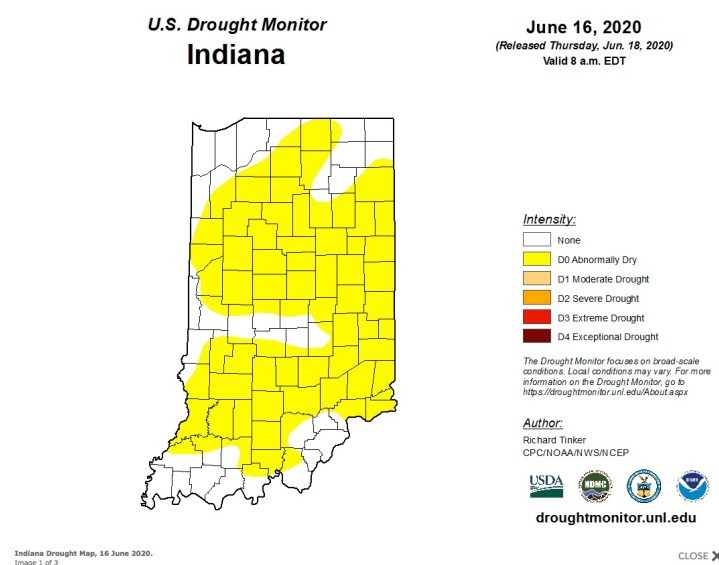


Fig. 1. U.S. Drought Monitor - Indiana, as of June 16, 2020.

Source: <https://droughtmonitor.unl.edu/>

What does this mean for young corn when most of the state's crop is

not much farther along than about the 8-leaf collar stage of development and in the early stages of the rapid growth period? Good question. The answer is, as you might expect... “It depends”.

Possible Consequences of Early Season Dryness

Early season dryness can be beneficial to young, developing corn plants. As I mentioned earlier, too often in the Eastern Corn Belt the bigger issue in May and June is excessive rainfall that saturates or even ponds the soil, resulting in stunted root development or outright death. Stunted root development includes the restriction of roots to shallow soil depths because deeper depths tend to stay excessively wet longer. Dry, or even unusually dry, soil conditions during the early stages of vegetative development can encourage, or allow, deeper initial rooting of young corn plants. Deeper initial rooting can pay dividends later in the season when conditions more frequently turn hot and dry.

When soil near the surface becomes excessively dry at the time when initial nodal root development of young corn plants (V2 ~ V6) is occurring, the young roots may desiccate and die. One consequence of such early season dryness is the development of “rootless” or “floppy” corn and potential loss of plant population (Nielsen, 2019)

Truly severely dry soils early in the season, coupled with warm sunny days, can limit water uptake by the young plants to the extent that photosynthesis is compromised. An outward symptom that is common around the state these days are young corn plants rolling their leaves in response to the leaf stomates closing as the plants try to slow transpiration of moisture through the plants. While the reduction in transpiration can be initially beneficial to the stressed plant, the closed stomates also result in less carbon dioxide being taken in by the leaves and this contributes to a reduction in photosynthesis (translation: “not good”).

The impact of the leaf rolling and the associated reduction in photosynthesis takes its toll on young corn plants by either stunting eventual plant development (shorter plants, smaller leaves) or restricting ear size potential (ovule formation during the rapid growth period). Of course, truly severe drought conditions can kill young corn plants outright, too.

So, potential grain yield reduction due to early season dryness can result from (1) outright loss of plant population due to death, (2) loss of potential kernel numbers before pollination (i.e., ovule formation), and/or (3) & (4) loss of surviving kernels after pollination (i.e., abortion of young kernels) or decreased kernel weight during grain fill due to smaller plants (smaller “factories”) and inadequate photosynthetic “output”.

Which of these consequences occur depends on the severity and duration of the early season dryness and what happens the remainder of the season. That’s why “it depends”.

Related References

Nielsen, R.L. (Bob). 2019. “Rootless” or “Floppy” Corn Syndrome. Corny News Network, Purdue Extension.
<http://www.kingcorn/news/timeless/FloppyCorn.html> [URL accessed June 2020].

The National Drought Mitigation Center. 2020. United States Drought Monitor. A partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration.
<https://droughtmonitor.unl.edu/> [URL accessed June 2020].

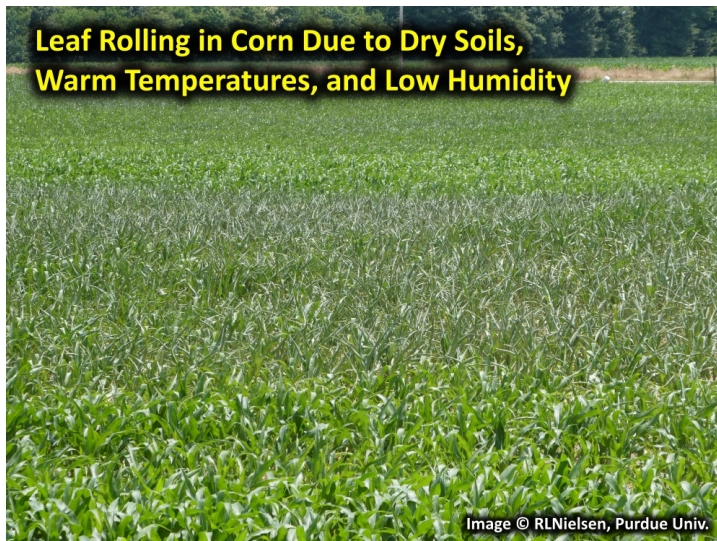


Fig. 2. Leaf rolling in corn due to dry soils, warm temperatures, and low humidity.

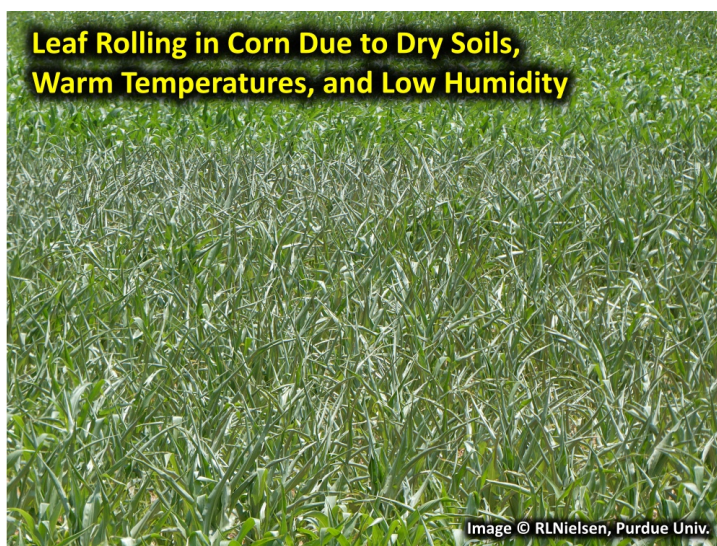


Fig. 3. Leaf rolling in corn due to dry soils, warm temperatures, and low humidity.

National Forage Week – A Time To Celebrate Forages

(Keith Johnson) & (Elysia Rodgers, Dekalb County ANR Educator)

This information is in memory of Lawrence Duncan, a dedicated grain and livestock farmer whose passion was breeding Hereford cattle. He was passionate about forages, too, stating “Grass is King around here”. And he didn’t mean corn!

National Forage Week (June 21 – 27) is coming to a close. The leadership team of the Indiana Forage Council, a not-for-profit organization, decided it was appropriate to share on the council’s Facebook page the contributions forage crops provide the world. If you didn’t see the daily posts, they follow.

2020 NATIONAL FORAGE WEEK

**MORE THAN 36 BILLION
TONS OF SOIL ARE LOST
TO EROSION EACH
YEAR WORLDWIDE.***

**PLANTING FORAGES TO
HELP COVER THE
LANDSCAPE GREATLY
REDUCES ALL TYPES OF
EROSION!**

*Data from Global Soil Diversity Initiative, 2017 Study

<https://indianaforage.org>



2020 NATIONAL FORAGE WEEK

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

<https://indianaforage.org>



2020 NATIONAL FORAGE WEEK

**THRIVING
FORAGES PROVIDE
NUTRITION
ESSENTIAL FOR
OPTIMAL
LIVESTOCK HEALTH
AND
PERFORMANCE.**

**ANIMALS CAN EAT
UP TO 100% OF
THEIR DIETS ON
FORAGES ALONE!**

<https://indianaforage.org>



2020 NATIONAL FORAGE WEEK

WELL-ESTABLISHED PERENNIAL LEGUMES, INCLUDING RED AND WHITE CLOVER, HAVE BEEN REPORTED TO PROVIDE 75 TO 200 POUNDS FIXED NITROGEN PER ACRE. THIS COMPARES WITH ALFALFA, WHICH PROVIDES 150 TO 200 POUNDS FIXED NITROGEN PER ACRE. THIS NITROGEN HELPS FEED THE GRASSES THAT ARE OFTEN PLANTED WITH LEGUMES.

Data from University of Nebraska-Lincoln, 2016



<https://indianaforage.org>

2020 NATIONAL FORAGE WEEK

**WHEN LIFE GIVES YOU
FORAGES, MAKE THE
MOST OF IT AND MAKE
MEAT, MILK, AND
FIBER PRODUCTS!**



<https://indianaforage.org>



<https://indianaforage.org>

**You Are
INVITED...**



**BECOME A
MEMBER OF THE
INDIANA FORAGE
COUNCIL**

**IF YOU'VE ENJOYED THE POSTS THIS WEEK,
CONSIDER JOINING US AT THE INDIANA FORAGE COUNCIL.
THE IFC OFFERS A LARGE RANGE OF BENEFITS!
JOIN BUSINESS PROFESSIONALS, EXTENSION EDUCATORS,
INDUSTRY LEADERS, AND PASSIONATE PRODUCERS AS WE NETWORK
IN OUR JOINED PASSION FOR FORAGES ACROSS INDIANA!**

The following information was developed many years ago to introduce children to forages. Enjoy meeting Freddy as he learns about forages.

Please share the video and coloring book with young and old!

Coloring book

<https://ag.purdue.edu/agry/k12/Documents/FreddyFriends.pdf>

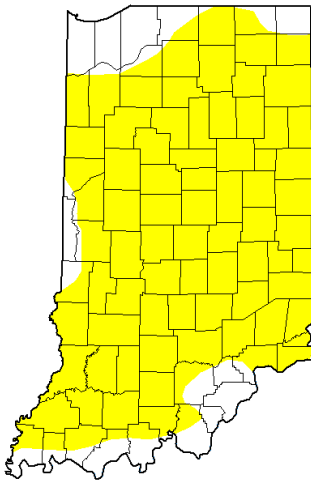
Celebrate every day with an appreciation for all that forages do for the world. Have some ice cream. It's a great indirect way for people to eat alfalfa and corn silage!

Did Indiana Get Enough Rain This Week?

(Beth Hall)







Prior to this week, there was growing concern of developing drought across Indiana. The U.S. Drought Monitor (Figure 1) has expanded the coverage of the D0 (Abnormally Dry) category across the state. From June 22 through June 25, however, there has been a wide range of rainfall across the state (Figure 2). Was it enough to fully recover the state from its deficit? Figure 3 shows the precipitation departure for Indiana from April 15th through June 25th compared to the 1981-2010 climatology. This map illustrates how much of the state is still a few inches behind, so Indiana could certainly benefit from more precipitation over the next few weeks. Climate outlooks are indicating increased probability that precipitation will be above normal for the southern half of the state through the first week of July. Northern counties are not showing any significant confidence for either above- or below-normal precipitation over this time period.

U.S. Drought Monitor Indiana



June 23, 2020
(Released Thursday, Jun. 25, 2020)
Valid 8 a.m. EDT

Intensity:

-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

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:

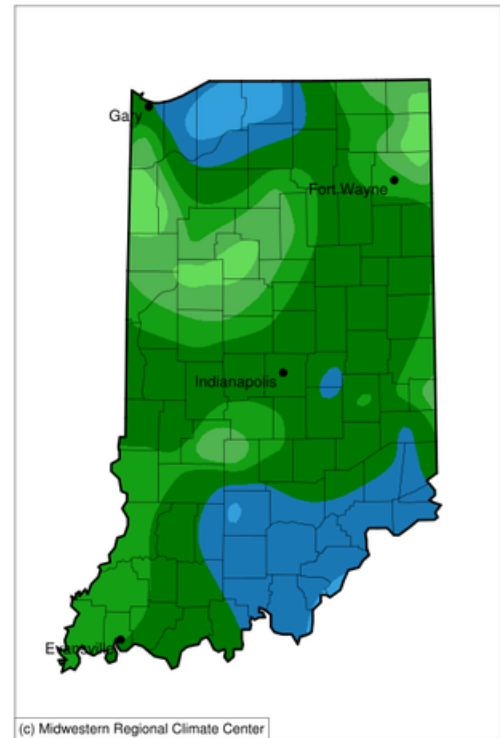
Adam Hartman
NOAA/NWS/NCEP/CPC



droughtmonitor.unl.edu

Accumulated Precipitation (in)

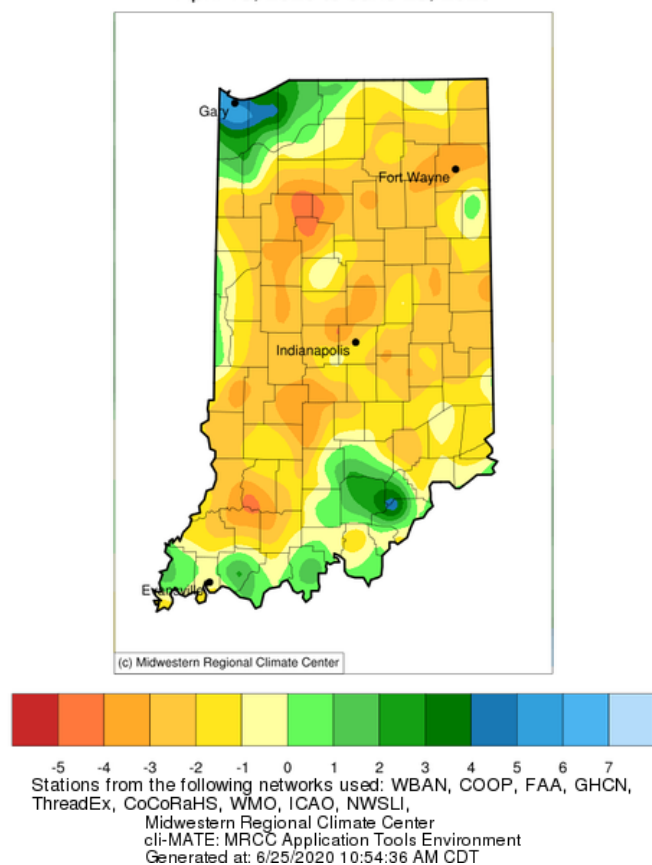
June 22, 2020 to June 25, 2020



Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Midwest Regional Climate Center
cli-MATE: MRCC Application Tools Environment
Generated at: 6/25/2020 10:59:50 AM CDT

Accumulated Precipitation (in): Departure from 1981-2010 Normals

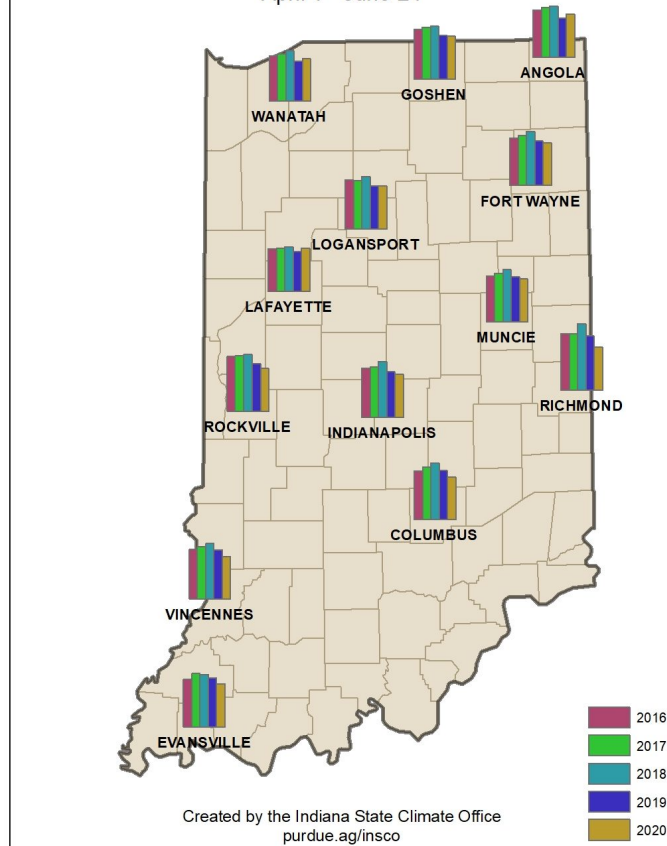
April 15, 2020 to June 25, 2020



Growing degree-day accumulations in the northern half of Indiana are catching up to levels seen in recent years (Figure 4). However, the southern half of the state is still lagging behind. Figure 5 illustrates the accumulated modified growing degree-day units from April 1 through June 24.

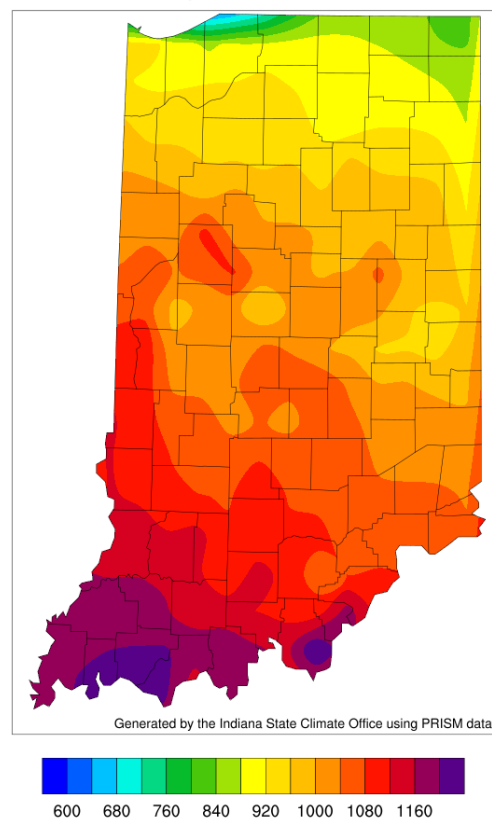
Accumulated Growing Degree Days (86/50)

April 1 - June 24



Growing Degree Day (50 F / 86 F) Accumulation

April 1 - June 24



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