

# Pest & Crop newsletter

**Purdue Cooperative Extension Service and USDA-NIFA Extension IPM Grant**

This work is supported in part by Extension Implementation Grant 2017-70006-27140/ IND011460G4-1013877 from the USDA National Institute of Food and Agriculture.

## In This Issue

- [Japanese Beetle Treatment Guidelines](#)
- [2019 Western Bean Cutworm Pheromone Trap Report](#)
- [An Update On Corn Tar Spot: What To Do If You Suspect It Is In Your Field](#)
- [Are Insects And Mites A Concern In Hemp?](#)
- [Scouting Finds A Number Of Concerns In Forage Fields - Be On The Lookout](#)
- [Indiana Climate and Weather Report 7/11/2019](#)

## Japanese Beetle Treatment Guidelines

(John Obermeyer)

News flash ... Japanese beetle have been emerging and can be seen throughout the state on corn and soybean plants. OK, not that news worthy. How about ... some areas of state are seeing tremendous numbers of beetles while some areas aren't that excited. Again, old news, as this happens every year. Here is a headline sure to grab attention ... Japanese beetle - their presence and damage is usually perceived worse than it is. Please refer to the following treatment thresholds.

**Field Corn:** Japanese beetle feed on corn leaves, tassels, and silks. Generally, leaf and tassel feeding can be ignored. If beetles are present and feeding on corn silks, an insecticide should be applied only if on average the silks are being cut off to less than 1/2 inch before 50% pollination has taken place. This rarely happens on a field-wide basis. Don't be overly excited by this pest's tendency to clump on a few ears within an area and eat the silks down to the husks. With sufficient soil moisture, silks will grow from 1/2 to 1 inch per day during the one to two weeks of pollen shed. Silks only need to be peeking out of the husk to receive pollen. Besides, beetles are often attracted to silks that have already completed the fertilization process even though they are still somewhat yellow. Check for pollen shed and silk feeding in several areas of the field, Japanese beetles tend to be present only in the outer rows of the field. Don't be influenced by what you think you may see from windshield surveys! Get out into fields to determine beetle activity. Be sure to walk in beyond the border rows before drawing any conclusions.



Japanese beetle "parties" on selected ears may give false impressions of pollination problems for the whole field.

**Soybean:** Soybean plants have the amazing ability to withstand considerable leaf removal (defoliation) before yield is impacted. The impact of defoliation is greatest during pod fill because of the importance of leaf area to photosynthesis, and ultimately to yield. Therefore, approximately 15-25% defoliation from bloom to pod fill can be tolerated before yields are economically affected. This defoliation must occur for the whole plant, not just the upper canopy. The beetles often congregate in areas of a field where they are first attracted to weeds such as smartweed. Typically, if economic damage occurs, it is only in these areas. Therefore, spot treatments should be considered. Don't be overly alarmed by these bright, iridescent beetles that feed on the top canopy of the soybean plants. Consider that as they feed their defoliation allows for better sunlight penetration into the lower plant canopy!



Japanese beetle will move to new feeding locations, notice how the new growth of these plants have very little damage.

**Kill the beetles to prevent grubs?:** Japanese beetle develop from grubs that fed on organic matter and/or the roots of plants last fall and this spring. Therefore, it seems logical that killing adult beetles one year should prevent grub damage the next. At least some farmers have explained this to me to justify sub-economic damage in a field. However, it simply doesn't work that way. Entomologists for decades have been trying to understand this fickle creature. Basically, the adults feed, mate, and lay eggs when and where they want to. The grubs are just as unpredictable. Research attempts to correlate grub presence to crop damage have been inconclusive. Damage does occur, but we are just not usually able to predict when or assess how much. Consider that each beetle mates and lays eggs several times during its oviposition period. To prevent egg laying in a field, one would need to treat multiple times during July and August, which is not economic or practical. If you are wondering, seed-applied insecticides, i.e., Poncho and Cruiser, provide some suppression of white grubs.

## 2019 Western Bean Cutworm Pheromone Trap Report

(John Obermeyer)

County	Cooperator	WBC Trapped						
		Wk 1 6/20/19-6/27/19	Wk 2 6/27/19-7/4/19	Wk 3 7/4/19-7/11/19	Wk 4 7/11/19-7/18/19	Wk 5 7/18/19-7/25/19	Wk 6 7/25/19-8/1/19	Wk 7 8/1/19-8/8/19
Adams	Roe/Mercer Landmark	0	0	0				
Allen	Gynn/Southwind Farms	0	0	1				
Allen	Kneubuhler/G&K Concepts	0	0	0				
Bartholomew	Bush/Pioneer Hybrids	0		0				
Boone	Emanuel/Boone Co. CES	4	2	7				
Clay	Fritz/Ceres Solutions/Clay City	0	3	0				
Clay	Mace/Ceres Solutions/Brazil	0	0	8				
Clinton	Emanuel/Boone Co. CES	0	2	3				
Clinton	Foster/Purdue CES	0	0	0				
Dubois	Eck/Dubois Co. CES	0	1	3				
Elkhart	Kauffman/Crop Tech Inc.	1	2	28				
Fayette	Schelle/Falmouth Farm Supply Inc.	0	0	1				
Fountain	Mroczkiewicz/Syngenta	9	1	115				
Fulton	Jenkins/Ceres Solutions	1	0	15				
Fulton	Randstead/Ceres Solutions	0	0	23				
Hamilton	Campbell/Beck's Hybrids	0	1					
Hamilton	Nicholson/Nicholson Consulting	0	0	1				
Hendricks	Tucker/Bayer	2	1	2				
Howard	Shanks/Clinton Co. CES	0	0	0				
Jasper	Overstreet/Jasper Co. CES	0	1	31				
Jasper	Ritter/Brodbeck Seeds	5	3					
Jay	Boyer/Davis PAC	0	0	6				

Jay	Shrack/Ran-Del Agri Services	0		2
Jay	Temple/Jay Co. CES/Pennville	1	1	2
Jay	Temple/Jay Co. CES/RedKey	3	3	9
Jennings	Bauerle/SEPAC	0	0	0
Knox	Clinkenbeard/Ceres Solutions/Freelandville	0	0	0
Kosciusko	Klotz/Etna Green			
Lake	Kleine	0	1	4
Lake	Moyer/Dekalb Hybrids/Shelby	0	1	12
Lake	Moyer/Dekalb Hybrids/Scheider	1	0	0
LaPorte	Rocke/Agri-Mgmt. Solutions/Wanatah	4	1	
Marshall	Barry			
Marshall	Harrell/Harrell Ag Services	1	1	5
Marshall	Klotz/Nappanee			
Miami	Early/Pioneer Hybrids	0	2	25
Montgomery	Delp/Nicholson Consulting	0	0	14
Newton	Moyer/Dekalb Hybrids/Lake Village	1	0	11
Porter	Tragesser/PPAC	0	0	1
Posey	Schmitz/Posey Co. CES/Cynthiana	0	0	0
Pulaski	Capouch/M&R Ag Services	6		
Pulaski	Leman/Ceres Solutions	2	0	0
Putnam	Nicholson/Nicholson Consulting	1	1	0
Randolph	Boyer/DPAC	0	1	20
Rush	Schelle/Falmouth Farm Supply Inc.	0	2	1
Shelby	Fisher/Shelby County Co-op			
Shelby	Simpson/Simpson Farms			4
St. Joseph	Carbiener/Breman	0	0	5
St. Joseph	Deutscher/Helena Agri-Enterprises	0	0	
Starke	Capouch	0		
Sullivan	Baxley/Ceres Solutions/Sullivan	0	0	4
Sullivan	Baxley/Ceres Solutions/New Lebanon	0	0	3
Sullivan	McCullough/Ceres Solutions/Farmersburg	0	0	0
Tippecanoe	Bower/Ceres Solutions/Lafayette	0	5	34
Tippecanoe	Nagel/Ceres Solutions	0	0	1
Tippecanoe	Obermeyer/Purdue Entomology	0	0	0
Tippecanoe	Westerfeld/Monsanto Research Farm	1	1	2
Tipton	Campbell/Beck's Hybrids	0	0	
Vermillion	Lynch/Ceres Solutions/Clinton	0	0	0
Wabash	Enyeart/Ceres Solutions		2	3
White	Foley/ConAgra	0	1	2
Whitley	Boyer, Richards/NEPAC/Schrader	0	0	1
Whitley	Boyer, Richards/NEPAC/Kyler	0	0	2

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

## An Update On Corn Tar Spot: What To Do If You Suspect It Is In Your Field

(Darcy Telenko)

Tar spot of corn is a new concern this season after the localized epidemics we experienced last year in Indiana. At this point in the field season, **we have not found any active tar spot in corn**, but we are on the hunt. We have initiated multiple research projects to try to address the many unanswered questions, but we need your help collecting samples.

**WANTED: Corn tar spot samples!**

**What to look for:** Small, black, raised spots (circular or oval) develop on infected plants, and may appear on one or both sides of the leaves, leaf sheaths, and husks. Spots may be found on both healthy (green) and dying (brown) tissue. Often, the black spots are surrounded by a tan or brown halo; this is especially obvious on healthy leaves (see



Figure 1).



Figure 1. Corn leaves infected by tar spot. Infection can range from severe to mild on a leaf. The spots will be raised (bumpy to the touch) and will not rub off. In addition, they be surround by a tan or brown halo.

We greatly appreciate the ‘suspect’ samples that we have received this season and want you to keep it up. So far, **all of these samples have been false** – all insect frass (poop). Therefore, I want to ask before you submit a sample you do a quick and dirty “spit test” to see if you can rub the spot off the leaf, especially if you have leaves with just a few small spots (Figure 2). I have been successful in detecting these false spots by placing a small amount of water (spit) on the leaf and rubbing with my finger – henceforth the “spit-test”. A small drop of water from your water bottle or facet will also do the trick. (Please do not lick your thumb or the leaf since these samples are out in the field and not clean to ingest). This is a quick way to check, but as always if you are unsure send us the sample.



Figure 2. An example where I found a ‘suspect’ spot, but with a little moisture I could rub it off with my finger.

See Figure 3 that shows how we can rub off the ‘suspect’ spot in the lab. Another way to distinguish is to look for insect feeding around the spot – this as well will probably mean you have found insect frass and not tar spot (Figure 3).

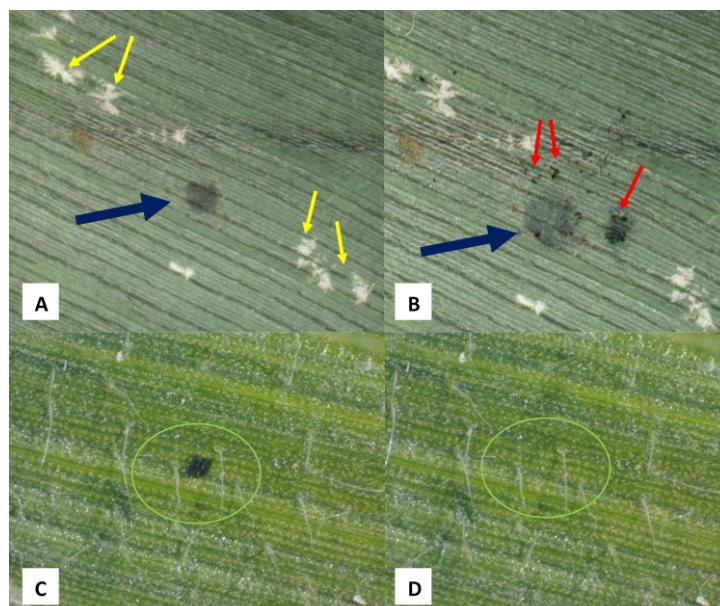


Figure 3. A) A ‘Suspect’ tar spot (blue arrow) and insect feeding damage (yellow arrows) on a corn leaf. B) The same spot, but scrapped away (red arrows), indicating insect frass. C) A suspect spot on a leaf (green circle), and D) Spot wiped away (green circle). (Photo Credit: John Bonkowski and Tom Creswell, PPDL)

**We are working with colleagues across the mid-west to track tar spot. Samples of corn infected with tar spot will greatly assist our on-going research projects investigating the biology and variability of populations of the corn tar spot pathogen.**

In addition, we have created a live map that will be updated when we have a positive confirmation. If you are interested, you can follow at this link <https://corn.ipmPIPE.org/tarspot/> or continue to follow us here, as I will update weekly on the disease progress once we find an active site.

If you have (or think you have) corn tar spot, please collect several leaves showing the symptoms and send them with a PPDL form [https://ag.purdue.edu/btny/ppdl/Documents/Forms/PPDL-Form\\_13MAY15FILLABLE.pdf](https://ag.purdue.edu/btny/ppdl/Documents/Forms/PPDL-Form_13MAY15FILLABLE.pdf).

Please wrap the leaves in newspaper and ship in a large envelope. Please ship early in the week. If you are sending samples from multiple locations please label them and provide the date collected, variety of corn, field zip code or county, and previous crop.

Research funding from the Indiana Corn Marketing Council is supporting sample processing, therefore there will be no charge for corn tar spot samples submitted to the clinic.

Mail to: Plant and Pest Diagnostic Laboratory  
LSPS-Room 116, Purdue University  
915 W. State Street  
West Lafayette, Indiana 47907-2054

Question please contact Darcy Telenko ([dtelenko@purdue.edu](mailto:dtelenko@purdue.edu)) or call 764-496-5168) or PPDL ([ppdl-samples@purdue.edu](mailto:ppdl-samples@purdue.edu) or call 765-494-7071).

## Are Insects And Mites A Concern In Hemp?

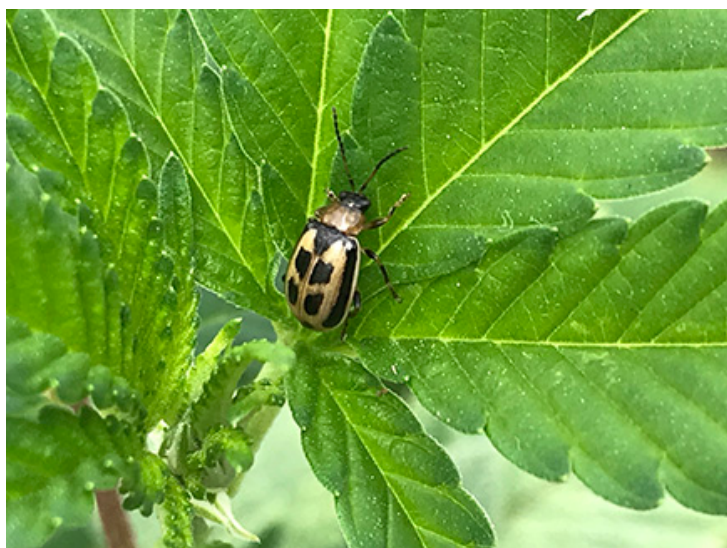
(Marguerite Bolt, [mbolt@purdue.edu](mailto:mbolt@purdue.edu))

As the growing season progresses, I am getting more questions about insects feeding on hemp. Contrary to literature published in the early 1900’s (Dewey. 1914), hemp does have insect and mite enemies, we just do not know which ones are economically important yet. We are in



our fifth growing season of planting hemp at Meigs farm and are seeing more of the pests that have been reported in Colorado (Cranshaw and Schreiner. 2018) and are listed in "Hemp Diseases and Pests" (McPartland et al. 2000).

Many of the pests found on hemp are generalists, which may be surprising to some considering how well defended hemp plants are. Hemp produces hundreds of secondary defense compounds (ElSohly and Gul. 2014; Andre et al. 2016), yet we are seeing pests that are common in some of our other commodity crops including; flea beetles, bean leaf beetles, corn earworm, and stink bugs. The pests that some growers are observing consume leaf material and the damage is minimal. We have not determined economic thresholds for hemp pests, but foliar damage is minor so far and would not warrant any kind of concern. Just because you see something eating your plant does not mean you need to panic. Pests that damage developing seeds or flowers are a concern and we will be monitoring for corn earworm, stink bugs, and Eurasian hemp borer (*Grapholita delineana*) this year.



Bean leaf beetle found on hemp, no noticeable foliar damage.



Spider mites on greenhouse grown CBD hemp. (Photo Credit: John Obermeyer)



Cannabis aphid under the scope.

In an indoor system, whether a grower is producing hemp clones or growing plants to harvestable maturity, common greenhouse pests, including spider mites and thrips, can be found feeding on hemp. We are also receiving reports of clone material coming in from Colorado with infestations of hemp russet mite (*Aculops cannibicola*) and cannabis aphid (*Phorodon cannabis*). We advise growers to inspect plant material for pests and diseases prior to accepting them. While Colorado has a list of insecticides and miticides that can be used in hemp production, no such list exists for Indiana at this point. Biological control using beneficial insects can be a tool for greenhouse pests, but we do not know which natural enemies will be most effective for hemp russet mites and cannabis aphid.

With any crop, scout for pests in your hemp and make note of damage. Take clear photos of the damage and any pests seen feeding on your hemp to help with identification. Purchasing a hand lens can be a helpful tool when looking for small pests like mites, thrips, and aphids. Good luck out there!

There has been a slight time change for the second session of the field day on July 19<sup>th</sup>, it will now end at 4:30pm.

#### Related References

Andre CM, Hausman J-F, Guerriero G (2016) Cannabis sativa: The Plant of the Thousand and One Molecules. Front. Plant Sci. 7:19 doi: 10.3389/fpls.2016.00019.

Cranshaw W and Schreiner M (2018) Hemp Insect Factsheets. <https://hempinsects.agsci.colostate.edu/hemp-insects-text/>.

Dewey L (1914) Hemp. In: USDA Yearbook 1913. pg 316.

ElSohly MA, Gul W (2014) Constituents of *Cannabis sativa*. In: Pertwee RG (eds) Handbook of cannabis. Oxford University Press, Oxford, UK, pp 3-22.

McPartland JM, Clarke RC, and Watson DP (2000) Hemp diseases and pests: management and biological control: an advanced treatise. CABI Pub.

## Scouting Finds A Number Of Concerns In Forage Fields – Be On The Lookout

(Keith Johnson)

1) The beginning of damage to alfalfa leaflets (note yellowing) caused by the potato leafhopper was seen on second harvest. Other individuals noted and confirmed much more severe damage than what is shown in the photo below. Information about the potato leafhopper can be found at <https://extension.entm.purdue.edu/fieldcropsipm/insects/sg-potato-leafhopper.php>



2) Ergot was noted on the seedheads of several cool-season forage grasses and cereal rye, too. Symptoms when consumed by livestock are similar to conditions with fescue toxicosis. Check pastures and seedheads in hay to see if the ergot bodies (sclerotia) can be found.

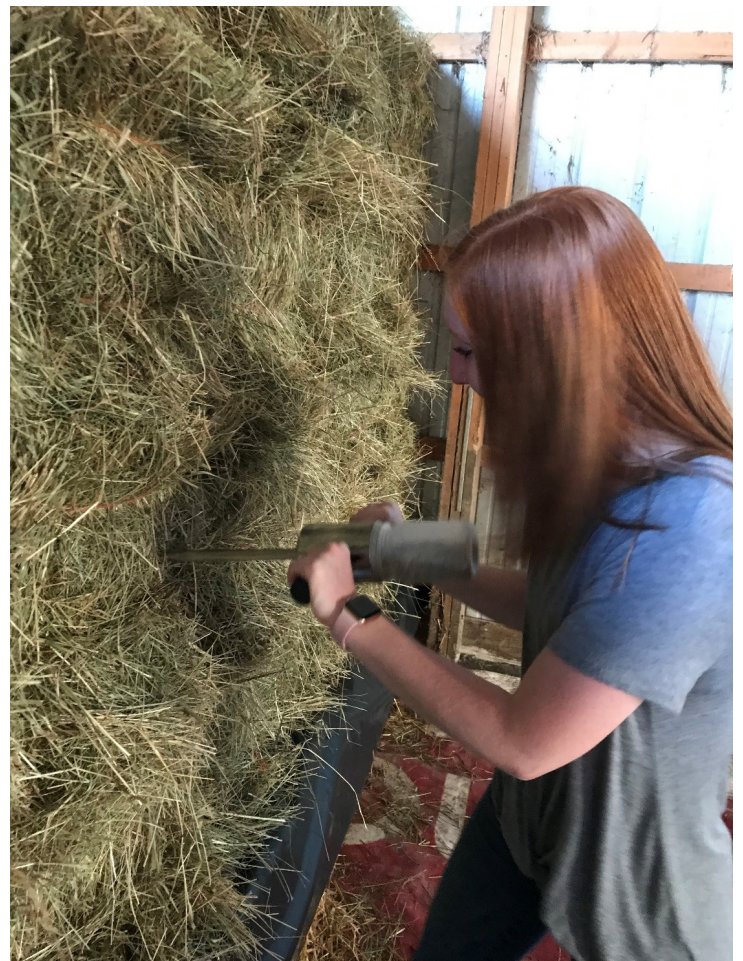




4) Taking hay samples with a forage probe was demonstrated at a Hendricks County Extension event. Hay quality to date in Indiana is not good. Producers need to measure forage quality and have rations developed by a trained nutritionist so body condition of livestock does not become a concern when the hay is fed. Many Purdue County Extension offices have a hay probe to loan. Information can be found at [www.foragetesting.org](http://www.foragetesting.org)



3) Japanese beetle adults were found preferentially feeding on sorghum-sudangrass next to a perennial grass pasture. No damage was occurring in the perennial grass pasture.





# Indiana Climate and Weather Report

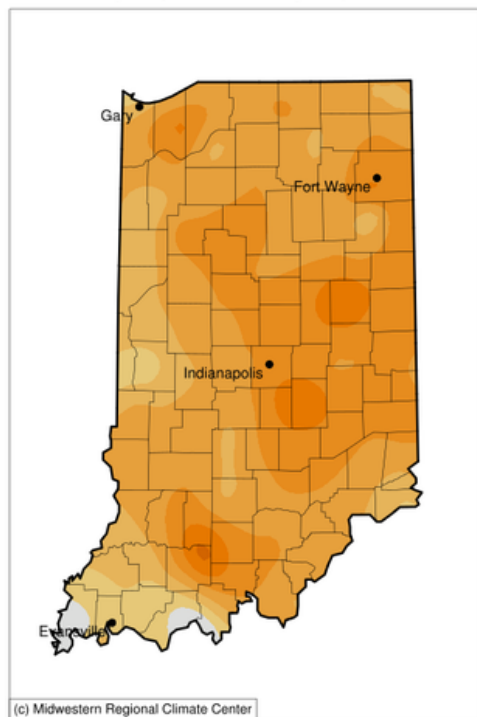
## 7/11/2019

(Beth Hall)

It seems someone left the oven on, again! Temperatures, so far, for July have been several degrees above normal (Figure 1) and with relatively calm winds and little precipitation, the warm temperatures during the day can feel brutal. Even nighttime lows have been several degrees above normal removing the much needed daily relief. Combine that with near-normal precipitation (up to only an inch above normal in the northwest, northeast, and southwest parts of the state, to only an inch below normal elsewhere), and high-temperature stagnation seems to be the climate over the last few weeks.

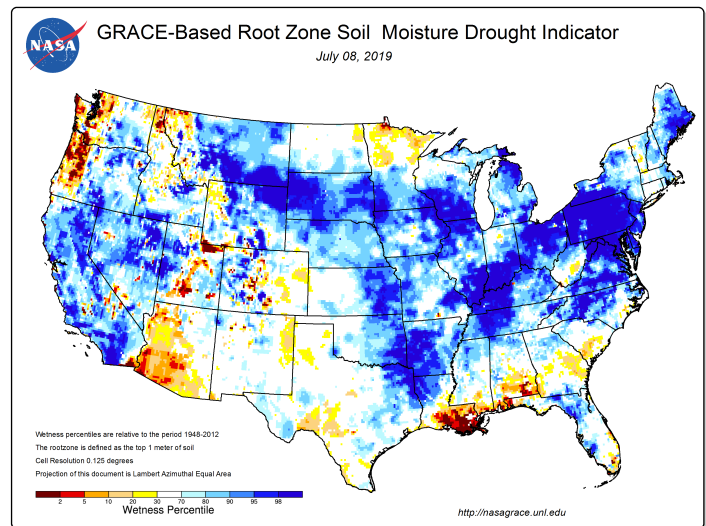
### Average Temperature (°F): Departure from 1981-2010 Normals

#### July 01, 2019 to July 10, 2019

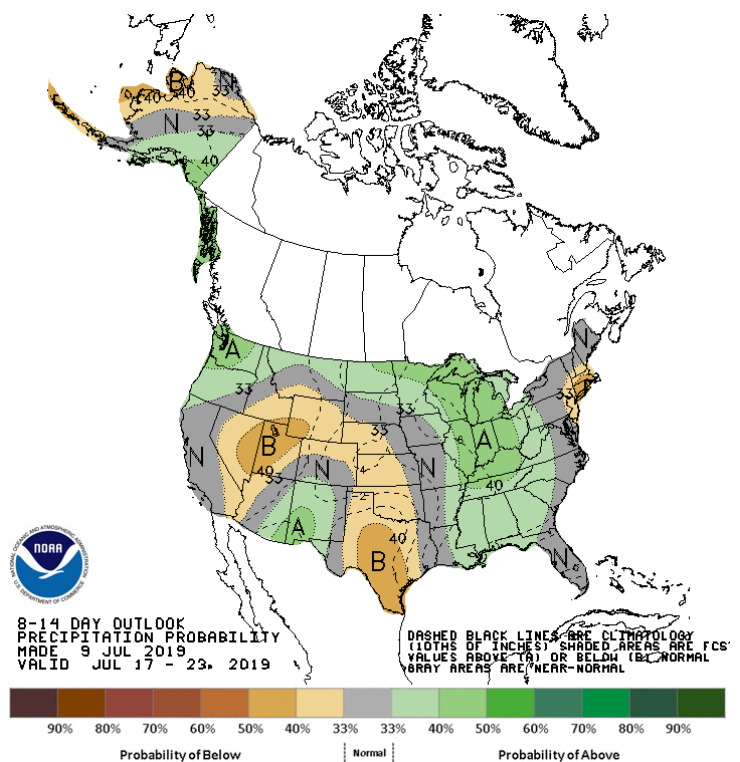


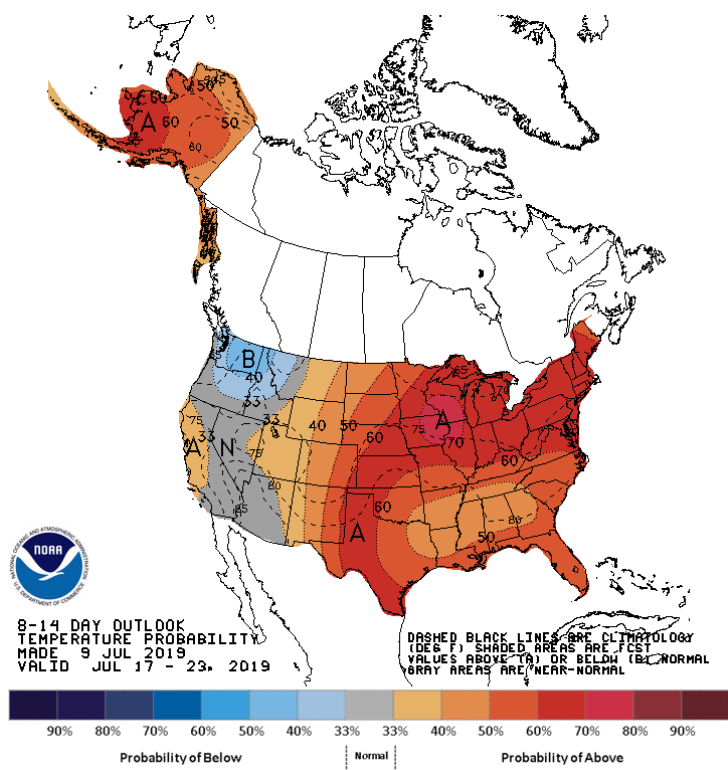
Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 7/10/2019 2:22:40 PM CDT

Root-zone soil moisture data is indicating a surplus for southern Indiana with near-normal conditions in the northern half of the state (Figure 2). Fortunately, there have not been any indications of reported drought across the state. However, continued high temperatures and normal / below-normal precipitation could present a rapid onset and potentially short-lived ("flash drought") drought environment.



The near-term (8-14-day) climate outlooks are predicting confidence for these above-normal temperatures to continue with the possibility of above-normal precipitation through the end of July (Figures 3 and 4). To provide some climatological perspective, Indiana normally receives 4.37" and 3.57" in July and August, respectively, with average daily temperatures of 74.2°F (July) and 72.6°F (August).





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 W. State St., West Lafayette, IN 47907