

Pest & Crop newsletter

Purdue Cooperative Extension Service and USDA-NIFA Extension IPM Grant

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European Corn Borer, Trapping and Monitoring

(John Obermeyer)

For the last several years, we have heard from pest managers about European corn borer (ECB) infestations and damage catching the producer, or themselves, off guard when growing non-traited corn. This seems to occur more often when large acreage of unprotected corn is grown in close proximity. Though this pest has been in decline since the early 2000's, when Bt-traited corn was becoming predominantly grown in the state, it is very obvious that their many other hosts, including weeds and vegetables, has kept them going...though low numbers.



European corn borer moth splatter on a windshield from days of old.

Questions have been asked about how and when to monitor for this pest. For seasoned pest managers, they recall it was a complex and fickle pest, even in its "heyday" before Bt-corn, varying greatly in damage from year to year. It should be no surprise that for the past couple of decades, there has been virtually no advancement in monitoring and predicting this pest, as the necessity of this work and university research dollars to do it dried up. For years, we maintained and reported captures from a black light trapping network (placed at

eight regional Purdue Ag Centers), ECB being one of many moth species. As expected, as Bt corn acreage increased/expanded, ECB moth captures declined; many times they were nearly absent throughout the year. There are no plans to resurrect that trapping program.

One important attribute of ECB biology, concerning monitoring, is that male and female moths mate at the appropriately-named "action sites" during the evening and night. Action sites are grassy areas outside of the field, examples being waterways and roadsides. In order to know early and peak flights of the moths, one must monitor during these times. ECB typically has two generations, historically mean flights are from May 26-June 10 for the first flight and July 26-August 14 for the second. The date range accounts for the developmental (heat) differences from southern to northern Indiana. To "ground-truth" these calendar dates, one can use black light and/or pheromone traps. The other less technical approach, but perfect for night-owls, is to drive farm lanes of the non-traited corn with your vehicle's bright lights. Yes, you will see them flying around and eliminate a few on the windshield. A slight caution with this method, there are other insect species that can have massive night flights but are not a concern to crops, e.g., mayflies.

Black light and pheromone traps (we have the Iowa strain in Indiana) both have their advantages and disadvantages. Traps need to be placed close to the crop of concern and checked daily, and the general rule is that more traps are better. Trapping, whether by black light or pheromone, for ECB is an art, not a science, and the important point is that trap catches are NOT PREDICTIVE of infestations and/or damage. The reality with any of the methods, even the night drive, is that you are gathering relative flight information to better time your scouting visits to the cornfields, ideally peak mating and egg-laying. Nonetheless, there are no shortcuts for scouting trips to determine egg laying and/or damage. ECB female moths are quite discerning about which field, and where in the field, they deposit their eggs. Meaning they will likely be clustered, rather than uniform, in a given field. If you have not had the pleasure, scouting for first-generation ECB is a walk-in-the-park compared to the second.

With prior research and the tools developed, this new/old pest can be managed quite successfully. Depending on acreage involved, it may require personnel dedicated to understanding and monitoring for this pest. Some might consider hiring a crop consultant that provides such services. If you are contemplating the thought of planned rescue treatments without the monitoring, there are plenty of experienced field personnel that will tell you that it won't work. The treatment window from egg hatch to larval boring is short, once in the stalk, control is not possible. Happy scouting!

Soybean Defoliation CONTEST

(John Obermeyer)

In speaking with producers, it is obvious that soybean defoliation (aka, leaf removal), especially by Japanese beetle, irritates them. Maybe this year especially, as they don't want any more things to go wrong with this already challenging year! For 30+ years, I have tried to convince folks that insect defoliation is almost always overestimated. The importance...understanding that soybean can withstand considerable feeding by insect pests without yield losses. Said another way, controlling the insects, when damage is below threshold, does not improve yield.

CONTEST: The following pictures are of one plant chosen at Purdue's Diagnostic Training Center, at R2 growth stage. Please reply to me, via email, obe@purdue.edu the following:

1. Total % plant defoliation (to the tenth, example, 99.9%)
2. Whether or not treatment is justified (HINT, see Pest&Crop Issue 2019.17, July 12)
3. Your name, and business/occupation should you choose

Fame and fortune! The winner will be recognized in next week's Pest&Crop. I look forward to receiving your educated guesses!



Field view from where the CONTEST plant was pulled.



CONTEST plant isolated from surrounding plants.



Holding up the CONTEST plant to determine light penetration.



Holding up the CONTEST plant to determine light penetration.

2019 Western Bean Cutworm Pheromone

Trap Report

(John Obermeyer)

County	Cooperator	WBC Trapped						
		Wk 1 6/20/19- 6/26/19	Wk 2 6/27/19- 7/3/19	Wk 3 7/4/19- 7/10/19	Wk 4 7/11/19- 7/17/19	Wk 5 7/18/19- 7/24/19	Wk 6 7/25/19- 7/31/19	Wk 7 8/1/19- 8/7/19
Adams	Roel/Mercer Landmark	0	0	0	0	0	0	0
Allen	Gynn/Southwind Farms	0	0	1	0	20		
Allen	Kneubuhler/G&K Concepts	0	0	0	1			
Bartholomew	Bush/Pioneer Hybrids	0	0	0	3			
Boone	Emanuel/Boone Co. CES	4	2	7	8	8		
Clay	Fritz/Ceres Solutions/Clay City	0	3	0	0			
Clay	Mac/Ceres Solutions/Brazil	0	0	8	0			
Clinton	Emanuel/Boone Co. CES	0	2	3	5	1		
Clinton	Foster/Purdue CES	0	0	0	4	0		
Dubois	Eck/Dubois Co. CES	0	1	3	3	2		
Elkhart	Kaufman/Crop Tech Inc.	1	2	28	118	184		
Fayette	Schelle/Falmouth Farm Supply Inc.	0	0	1	0	0		
Fountain	Mroczkiewicz/Syngenta	9	1	115	65	4		
Fulton	Jenkins/Ceres Solutions	2	0	15	96	151		
Fulton	Randstead/Ceres Solutions	0	0	23	17	27		
Hamilton	Campbell/Beck's Hybrids	0	1	3	1	0		
Hendri	Nicholson/Nicholson Consulting	0	0	1	0			
Hendricks	Tucker/Bayer	2	1	2	6			
Howard	Shanks/Clinton Co. CES	0	0	0	0	0		
Jasper	Overstreet/Jasper Co. CES	0	1	31	252	1152		
Jasper	Ritter/Dairyland	5	3	7	114	76		
Jay	Boyer/Davis PAC	0	0	6	8	5		
Jay	Shrack/Ran-Del Agri Services	0	0	2	1	2		
Jay	Temple/Jay Co. CES/Pennville	1	1	2	2	11		
Jay	Temple/Jay Co. CES/RedKey	3	3	9	6	10		
Jennings	Bauerle/SEPAC	0	0	0	0	0		
Knox	Clinkenbeard/Ceres Solutions/Freelandville	0	0	0	0			
Kosciusko	Klotz/Etna Green	0	1	4	10	32		
Lake	Moyer/Dekalb Hybrids/Shelby	0	1	12	16	189		
Lake	Moyer/Dekalb Hybrids/Schneider	1	0	0	19	140		
LaPorte	Rocke/Agri-Mgmt. Solutions/Wanatah	4	1	40	45	555		
Marshall	Harrell/Harrell Ag Services	1	1	5	16	34		
Marshall	Klotz/Nappanee	0	0	8	105			
Miami	Early/Pioneer Hybrids	0	2	25	82	25		
Montgomery	Delp/Nicholson Consulting	0	0	14	2	307		
Newton	Moyer/Dekalb Hybrids/Lake Village	1	0	11	48	24		
Porter	Tragesser/PAC	0	0	1	9			
Posey	Schmitz/Posey Co. CES/Cynthiana	0	0	0	6			
Pulaski	Capouch/M&R Ag Services	6	0	0	30	84		
Pulaski	Leman/Ceres Solutions	2	0	1	2			
Putnam	Nicholson/Nicholson Consulting	1	1	0	2	1		
Randolph	Boyer/DPAAC	0	1	20	12	2		
Rush	Schelle/Falmouth Farm Supply Inc.	0	2	1	0	0		
Shelby	Fisher/Shelby County Co-op	0	0	0	0	0		
Shelby	Simpson/Simpson Farms	0	0	4	15	1		
St. Joseph	Carbiener/Breman	0	0	2	41	9		
St. Joseph	Deutscher/Helena Agri-Enterprises	0	0	5	10	47		
Starke	Capouch	0	0	1	21	11		
Sullivan	Baxley/Ceres Solutions/Sullivan	0	0	4	0			
Sullivan	Baxley/Ceres Solutions/New Lebanon	0	0	3	0			
Sullivan	McCullough/Ceres Solutions/Farmersburg	0	0	0	0			
Tippecanoe	Bower/Ceres Solutions/Lafayette	0	5	34	3			
Tippecanoe	Nagel/Ceres Solutions	0	0	0	1	3		
Tippecanoe	Obermeyer/Purdue Entomology	0	0	0	0	0		
Tippecanoe	Westerfeld/Monsanto Research Farm	1	1	2				
Tipton	Campbell/Beck's Hybrids	0	0	1	8	1		
Vermillion	Lynch/Ceres Solutions/Clinton	0	0	0	0			
Wabash	Enyeart/Ceres Solutions	0	2	3				
White	Foley/ConAgra	0	1	2	4	4		
Whitley	Boyer, Richards/NEPAC/Schrader	0	0	8	8	9		
Whitley	Boyer, Richards/NEPAC/Kyler	0	0	2	11	11		

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

2019 Corn Earworm Trap Report

(Tammy Luck, luck@purdue.edu)



Southern Rust and Tar Spot Update on Corn in Indiana: We need your help!

(Darcy Telenko)

Southern Rust: Southern rust was officially confirmed in Posey County this week. We currently have two positive counties and one probable in Indiana. **We need your help** - if you are out scouting field in the surrounding counties please let us know if you find any suspect samples. If you are unsure and want to email me a preliminary image before sending a sample to the Purdue Plant Pest Diagnostic Lab you can at dtelenko@purdue.edu. As a reminder, here is a link for submitting a sample to the PPDL <https://ag.purdue.edu/btny/ppdl/Pages/Submit-A-Sample.aspx>

Southern rust pustules generally tend to occur on the upper surface of the leaf, and produce chlorotic symptoms on the underside of the leaf (Figure 2). These pustules rupture the leaf surface and are orange to tan in color. They are circular to oval in shape. We are seeing a lot of common rust as well and both diseases could be present on a leaf.

There are a few characteristics to use to try to distinguish southern rust from common rust. Common rust will form pustules on both sides of the leaf. In addition, common rust pustules tend to be spread out across the leaf, and less densely clustered. Common rust pustules have a brick red to brown coloration and may be more elongated than southern rust pustules.

Check out the southern rust publication for more images of southern rust and other diseases that might mimic it. This publication also has good information on determining when a fungicide application will be beneficial. The publication is at following link: <https://crop-protection-network.s3.amazonaws.com/publications/cpn-2009-southern-rust.pdf>.

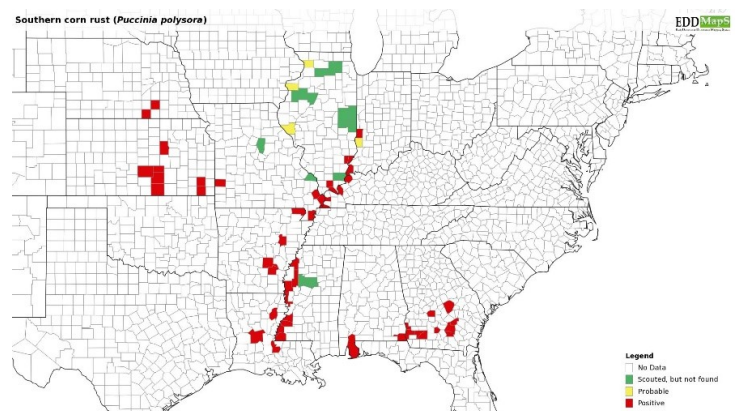


Figure 1. Map of counties confirmed for southern corn rust as of July 25, 2019.

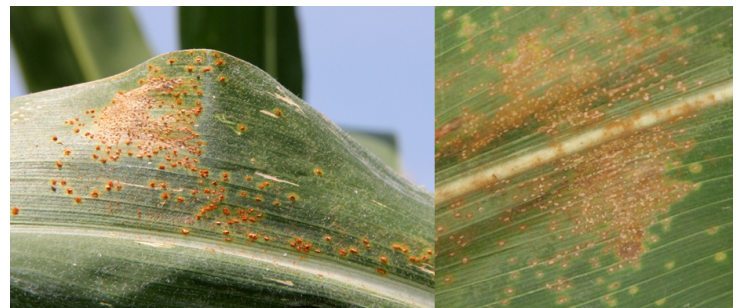


Figure 2. Southern rust pustules on corn leaf, and chlorosis on the underside of the leaves. Pustules generally form and erupt on upper surface. (Photo Credit: A. Sisson, Iowa State University at <https://cropprotectionnetwork.org/resources/articles/diseases/southern-rust-of-corn>)

Tar Spot: There has been no additional counties added for tar spot this week in Indiana. Michigan, Illinois, and Iowa have all now confirmed at least one county (Figure 3). In Indiana, at sites where tar spot was found last week we have started to see secondary infection (Figure 4) and more tar spot developing in the lower canopy. Most locations still show very unfavorable conditions for tar spot to develop. We again are requesting if you have any suspect locations to please update us and send a sample. I am especially interested in surrounding counties such as Lake, Jasper, Pulaski, St. Joseph and Starke or anything in the northern part of Indiana.

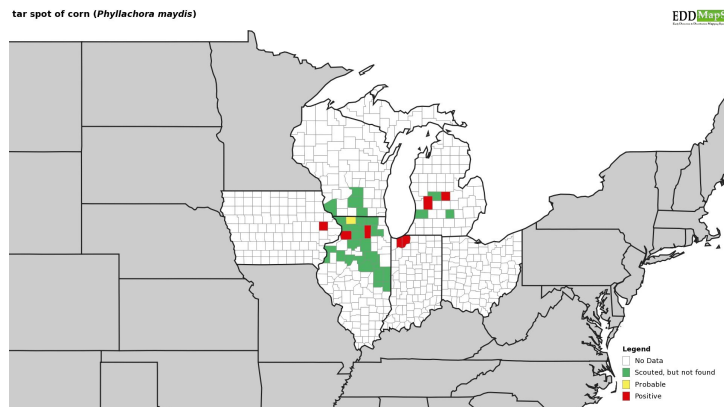


Figure 3. Distribution of tar spot of corn as of July 25, 2019. Source: <https://corn.ipmPIPE.org/tarspot/>.



Figure 4. Multiple tar spot stroma found in the lower canopy. (Photo Credit: Tiffanna Ross, Purdue)

Both gray leaf spot and northern corn leaf blight are also active in the lower canopy of corn across the state. It is going to be **extremely important to be out scouting**, especially if you are trying to make a decision on a fungicide application. We just release an article discussing the factors that should be considered due to the late planting. See Mueller, et al. Foliar Fungicide Decisions for Late-Planted Crops. <https://cropprotectionnetwork.org/resources/features/foliar-fungicide-decisions-late-planted-crops>

As a reminder the field history, disease activity, hybrid susceptibility, weather conditions, the price of corn, and cost of fungicide application are factors that should be considered in making a decision to apply a foliar fungicide.

Due to the need to monitor both southern rust and tar spot in Indiana, there will be **no charge for southern rust and tar spot samples submitted to the PPDL for diagnostic confirmation**. This service is made possible through research supported by the Indiana Corn Marketing Council.



We will continue keeping a close eye on risk models and intensely scouting more fields. I am interested in adding more locations in surrounding counties in northern Indiana; please contact me if you are interested in helping. Please feel free to contact me at (dtelenko@purdue.edu) or the PPDL (ppdl-samples@groups.purdue.edu) with any major disease issues you may have this season.

Indiana Climate and Weather Report - 7/25/2019

(Tammy Luck, luck@purdue.edu)

The brutal heat wave has passed, but there are still plenty of warm days ahead. Climate outlooks (over the next few weeks) are suggesting confidence of above-normal precipitation across Indiana. The 7-day forecast is indicating up to 1" of rain over the next week for most of the state (Figure 1). The air is likely to remain muggy, with transpiration from crops and warm temperatures welcoming the moisture. Last week, the modified stress degree-day (mSDD) tool was mentioned, with the map suggesting heat stress was near normal. However, after that heat wave, there are areas in southeast Indiana that showing above-normal mSDDs (Figure 2). This may cause increased stress to crops and livestock (not to mention humans and pets!).

Drought has started to rear its ugly head in central and northern Indiana. The latest US Drought Monitor has introduced D0 (Abnormally Dry) conditions to several areas due to the lack of moisture and increased temperatures (Figure 3). This will likely start to impact shallow root zones.

The August climate outlooks for both temperature and precipitation are indicating equal chances for either above- or below-normal conditions.

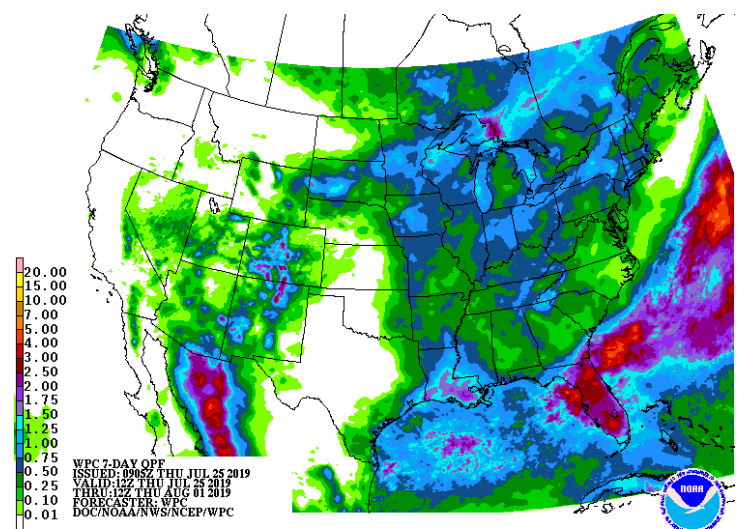


Figure 1. Quantitative Forecasted Precipitation (QPF) map showing estimated amount of precipitation for July 25 - Aug 1, 2019.

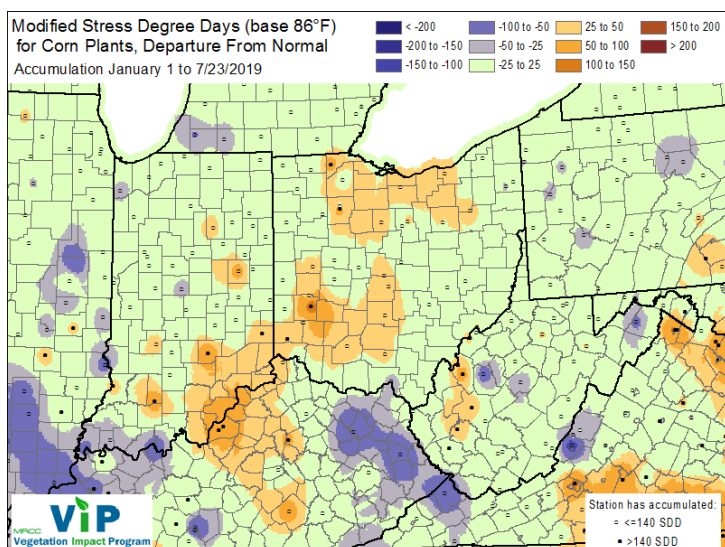


Figure 2. Modified Stress Degree Days

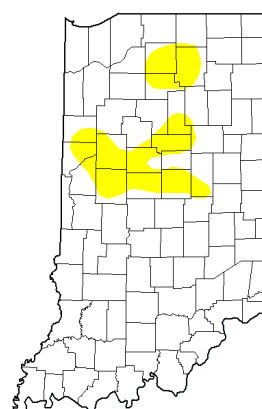
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U.S. Drought Monitor

Indiana

July 23, 2019

(Released Thursday, Jul. 25, 2019)
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. See accompanying text summary for forecast statements.

Author:

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U.S. Department of Agriculture



droughtmonitor.unl.edu

Figure 3. U.S. Drought Monitor.