

# Pest&Crop newsletter

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

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## In This Issue

- [Moisture Stressed Soybean and the “S” Word \(spider mites\)](#)
- [2018 Western Bean Cutworm Pheromone Trap Report](#)

- [Update on Wind Speeds and the New Dicamba Labels](#)
- [Total Precipitation July 12 – July 18, 2018](#)
- [Average Temperature Departure from Mean July 10-16, 2018](#)

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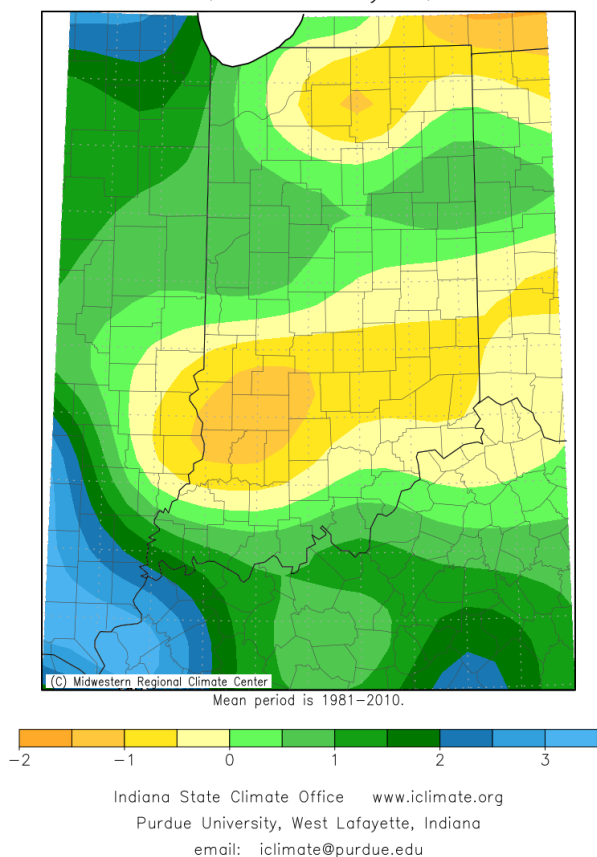
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# Moisture Stressed Soybean and the “S” Word (spider mites)

**Authors: Christian Krupke and John Obermeyer**

As some areas of Indiana are dry getting drier, there is more concern about the possibility about spider mites being a culprit for yellowing foliage. Remember that many other factors can cause plants to yellow (nutrient deficiencies, soybean cyst nematode, disease, lack of moisture, compaction, herbicide damage, etc.). This multitude of possibilities once again highlights the importance of a thorough field evaluation before making a judgment as to the cause(s) of a problem.

Accumulated Precipitation (in): Departure from Mean  
June 17, 2018 to July 16, 2018



30-day rainfall map showing the driest areas of Indiana.

If the problem is due to spider mites, a good understanding of the pest's biology, level of infestation, potential for damage, and management alternatives are needed to properly deal with the infestation. Along field edges of moisture stressed soybean, scout for spider mites and look for feeding damage. Shake discolored plants over a white piece of paper and watch for small dark specks (1/60 inch in length) moving about. Do not confuse these with the lighter colored, elongated thrips which are at least twice as long. Once spider mites have been positively identified in the damaged area(s) of the field, it is essential that the whole field be scouted to determine the range of the infestation. Often the edges of the field will be most heavily infested, as mites move from various broadleaf weeds (including clover) onto soybeans. Sample at least 5 different areas of the field and determine whether the spider mites are present or not by using the “shake” method.

Because rain and cooler temperatures are forecast for the next several days, it is important to understand weather's impact on spider mites

already in fields:

Extended hot and dry conditions will:

- encourage the movement of spider mites from drying field sides to soybean
- favor rapid (explosive!) reproduction of spider mites
- cause spider mites to increase their feeding
- dramatically reduce fungal pathogens that normally keeping spider mites in check
- create moisture stressed plants that provides a higher concentration of nutritious fluids (“protein broth”)

A significant rainfall (1 inch or more) followed by high humidities will:

- physically kill some spider mites by dislodging them from the plant
- encourage the growth, development, and dissemination of beneficial fungal pathogens
- recharge the plant's fluids, making them less conducive to spider mites

For soybean fields scheduled for a fungicide application, should an insecticide be added to pick up the annoying Japanese beetles, grasshoppers, and various other foliage feeders? There is no reason to think it will be anything but a waste of time and money, and could actually cause problems. Lurking in every soybean field are low numbers of spider mites and aphids. We rarely notice them when conditions remain “normal”, as they are being fed upon by a range of predatory insects and spiders. However, treating fields with insecticide may tip the balance in the favor of potential pests. This is because natural enemies recover more slowly from broad-spectrum insecticides compared with mites and aphids, which have an extremely rapid generation time and are generally more difficult to kill with insecticides.

Dry conditions exacerbate crop damage from mites and aphids. One major reason for this is that fungal pathogens, that cause insect diseases, do not flourish. Just as crop diseases (most of which are moisture-loving fungi) are more likely during wet/high humid conditions, so are insect diseases. An epizootic is quite impressive, as potentially damaging populations of billions of mites/aphids are quickly and thoroughly wiped out. Fungicides sprayed for crop diseases also suppress insect pathogens. This is one reason why high-value crops, e.g., fruits and vegetables, receiving prophylactic (calendar sprays) of fungicide and insecticide often have spider mite flare-ups.



Is this field yellowing from spider mite feeding, only one way to find out!



Very early stippling or bronzing from spider mite feeding. Look carefully on the underside of the leaf.

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# 2018 Western Bean Cutworm Pheromone Trap Report

County	Cooperator	WBC Trapped						
		Wk 1 6/21/18-6/28/18	Wk 2 6/28/18-7/5/18	Wk 3 7/5/18-7/12/18	Wk 4 7/12/18-7/19/18	Wk 5 7/19/18-7/26/18	Wk 6 7/26/18-8/2/18	Wk 7 8/2/18-8/9/18
Adams	Roe/Mercer Landmark	0	0	0	4			
Allen	Anderson/Syngenta		0	9				
Allen	Gynn/Southwind Farms	0	0	5	8			
Allen	Kneubuhler/G&K Concepts	0	0	9	4			
Bartholomew	Bush/Pioneer Hybrids	0	1	0	0			
Clay	Bower/Ceres Solutions/Clay City	0	1	0	0			
Clay	Bower/Ceres Solutions/Bowling Green	0	0	0	0			
Clay	Bower/Ceres Solutions/Brazil	0	0	0	1			
Clinton	Emanuel/Boone Co. CES	3	0	0	1			
Clinton	Foster/Rossville		10	0	1			
Daviess	Venard/Venard Agri-Consulting/Washington	0	0	0				
Daviess	Venard/Venard Agri-Consulting/Elnora	0	0	0				
DeKalb	Hoffman/ATA Solutions	0	1	11	27			
Dubois	Eck/Dubois Co. CES	0	0	0	2			
Elkhart	Kauffman/Crop Tech Inc.	6	3	58	39			
Fayette	Schelle/Falmouth Farm Supply Inc.	0	1	0	0			
Fountain	Mroczkiewicz/Syngenta	12	196	18	1			
Fulton	Jenkins/Ceres Solutions/Talma	3	0	26	12			
Fulton	Randstead/Ceres Solutions	0	34	61	16			
Greene	Venard/Venard Agri-Consulting	0	0	0	0			
Hamilton	Campbell/Beck's Hybrids	0	0	2	3			
Hendricks	Nicholson/Nicholson Consulting	0	7	2	0			
Jasper	Overstreet/Jasper Co. CES	0	0	4	9			
Jasper	Ritter/Brodbeck Seeds	10	69	72	17			
Jay	Boyer/Davis PAC	1	0					
Jay	Shrack/Ran-Del Agri Services	0	1	0				
Jay	Temple/Jay Co. CES/Redkey	0	0	0	0			
Jay	Temple/Jay Co. CES/Pennville	0	0	0	0			
Jennings	Bauerle/SEPAC	0	0	0	0			
Knox	Bower/Ceres Solutions/Freelandville	0	0	0	0			
Knox	Bower/Ceres Solutions/Vincennes	0	0	0	0			
Kosciusko	Klotz/Etna Green	5	1	44	10			
Lake	Kleine	2	1	0	7			
Lake	Moyer/Dekalb Hybrids/Shelby	0	4	52	20			
Lake	Moyer/Dekalb Hybrids/Scheider	5	23	207	112			
LaPorte	Rocke/Agri-Mgmt. Solutions/Wanatah	1	3	22	8			
LaPorte	Smith/Co-Alliance, LLP/South Center	0	7	96	59			
LaPorte	Smith/Co-Alliance, LLP/Lacrosse	4	8	106	88			
LaPorte	Smith/Co-Alliance, LLP/Union Mills	8	17	204	335			
Marshall	Harrell/Harrell Ag Services/Plymouth	0		12	36	18		
Marshall	Harrell/Harrell Ag Services/Bremen	0		4	24	12		
Marshall	Klotz/Nappanee	6		11	278	77		
Marshall	Miller/Ceres Solutions/Plymouth	2		85	80	64		
Marshall	Smith/Co-Alliance, LLP/Argos	7		32	273	113		
Miami	Early/Pioneer Hybrids	4		26	116	39		
Montgomery	Delp/Nicholson Consulting	0		0	3	3		
Newton	Moyer/Dekalb Hybrids/Lake Village	1		5	75	20		
Porter	Tragesser/PPAC	2		11	61	41		
Posey	Schmitz/Posey Co. CES/Cynthiana	0		0	0			
Posey	Schmitz/Posey Co. CES/St. Phillips W	0		0	1			
Pulaski	Capouch/M&R Ag Services	7		42	345			
Pulaski	Leman/Ceres Solutions	5		3	14			
Putnam	Nicholson/Nicholson Consulting	0		1	0	0		
Randolph	Boyer/DPAC	1		3				
Rush	Schelle/Falmouth Farm Supply Inc.	0		0	0	5		
Shelby	Fisher/Shelby County Co-op	0		0	0			
Shelby	Simpson/Simpson Farms	1		1	0	5		
St. Joseph	Barry/Helena	1		5	46	68		
St. Joseph	Battles/Mishawaka	0		0	28	4		
St. Joseph	Carbiener/Breman	0		0	10	5		
St. Joseph	Smith/Co-Alliance, LLP/Granger	3		53	196	76		
St. Joseph	Smith/Co-Alliance, LLP/New Carlisle	1		3	11	52		
Starke	Capouch/Medaryville	2		11	2			
Starke	Smith/Co-Alliance, LLP/Hamlet	9		34	233	215		
Sullivan	Bower/Ceres Solutions/Farmersburg	0		0	0	0		
Sullivan	Bower/Ceres Solutions/Sullivan	0		3	0	0		
Tippecanoe	Bower/Ceres Solutions/Lafayette	4		56	20	5		
Tippecanoe	Nagel/Ceres Solutions	0		4	15	0		
Tippecanoe	Obermeyer/Purdue Entomology	0		0	0	0		
Tippecanoe	Westerfeld/Monsanto Research Farm	6		10	6	1		
Tipton	Campbell/Beck's Hybrids	0		0	0	4		
Vermillion	Bower/Ceres Solutions/Clinton	0		0	0	0		
Wabash	Enyeart/Ceres Solutions	0		0	2	1		
Whitley	Boyer, Richards/NEPAC/Schrader	3		3	31	19		
Whitley	Boyer, Richards/NEPAC/Kyler	0		0	16	4		

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

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# Update on Wind Speeds and the New Dicamba Labels

**Authors: Joe Ikley and Bill Johnson**

Now that we are in the middle of July and most herbicide applications in corn and soybean should have ended, we wanted to take a look back at June this year. Specifically, we wanted to look at the weather this past June with regards to the labels for Engenia, FeXapan, and Xtendimax. Last year we used weather data from the Agronomy Center for Research and Education (ACRE) near West Lafayette to determine how many hours were available to legally apply these products. This year, we installed new weather stations at Throckmorton Purdue Agricultural Center (TPAC) in Lafayette. A few improvements with our new weather stations are that we have the ability to measure for temperature inversions, and that we have our wind gauge placed 3 feet above the ground, which would be about the maximum boom height for a postemergence application of those three products.

As a reminder of some of the limitations on these product labels, we can only make applications when the wind speed is between 3 and 10 MPH, and the Office of the Indiana State Chemist (OISC) and herbicide registrants also include a wind gust over 10 MPH as a label violation. Applications are prohibited during a temperature inversion, and applications can only be made between sunrise and sunset. We are also not supposed to make applications within 24 hours of a forecast rain event. Knowing that applicators were given the ability to use their preferred weather source for rainfall predictions, and the hit-and-miss nature of many of our rain events this year, we did not include the 24 hour restriction when we calculated spray hours this June. To determine the legal hours in June for this year, we combined the weather station data with the rainfall events at TPAC and how often the farm (i.e. Pete) was able to get their commercial sprayer onto a field for any type of pesticide application. When we packaged everything together, there were 47 hours across the month of June to legally apply Engenia, FeXapan, and Xtendimax at TPAC this year.

To get a better picture of overall wind and temperature inversion data for the Lafayette region, we made a second calendar that ignored rainfall and soil conditions. We found that we had 106 hours throughout June where we had on-label wind conditions, and no temperature inversion. We did not factor wind direction into these calendars, so it's important to remember that an application is not allowed when a sensitive crop is downwind. So as far as applications go, these calendars are a "best case" situation where you do not have any sensitive crop downwind of an application.

June 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 3	2 5
3	4 2	5	6 8	7 2	8 5	9 3
10 1	11 7	12 11	13 3	14	15 5	16 6
17 5	18 1	19 4	20 1	21 4	22 4	23 5
24	25 1	26 6	27	28	29 3	30 11

GREEN = 8 or more hours with no temperature inversion and favorable wind speeds during daylight hours  
YELLOW = Less than 8 hours with no temperature inversion and favorable wind speeds during daylight hours  
RED = Could not spray due to temperature inversion or off-label wind speeds

Figure 2. Hours with on-label wind and no temperature inversions in June 2018 at the Throckmorton Purdue Agricultural Center (TPAC) near Lafayette, IN. If a box is red, there were no spray hours that day due to off-label wind or temperature inversions. If a box is green, there were 8 or more hours in a day where winds were between 3 and 10 MPH (including gusts) and no temperature inversion present. If a box is yellow, there were less than 8 hours in a day where winds were between 3 and 10 MPH (including gusts) and no temperature inversion present.

June 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4 2	5	6 8	7	8	9
10	11	12	13 3	14	15 5	16 6
17 5	18 1	19 3	20	21	22	23
24	25	26	27	28	29 3	30 11

GREEN = 8 or more legal spray hours in a day  
YELLOW = Less than 8 legal spray hours in a day  
RED = Could not spray due to off-label weather conditions, rainfall event, or fields too wet.

Figure 1. Spray days in June 2018 at the Throckmorton Purdue Agricultural Center (TPAC) near Lafayette, IN. If a box is red, there were no spray hours that day due to field conditions. If a box is green, there were 8 or more hours in a day where winds were between 3 and 10 MPH (including gusts) and no temperature inversion present. If a box is yellow, there were less than 8 hours in a day where winds were between 3 and 10 MPH (including gusts) and no temperature inversion present.

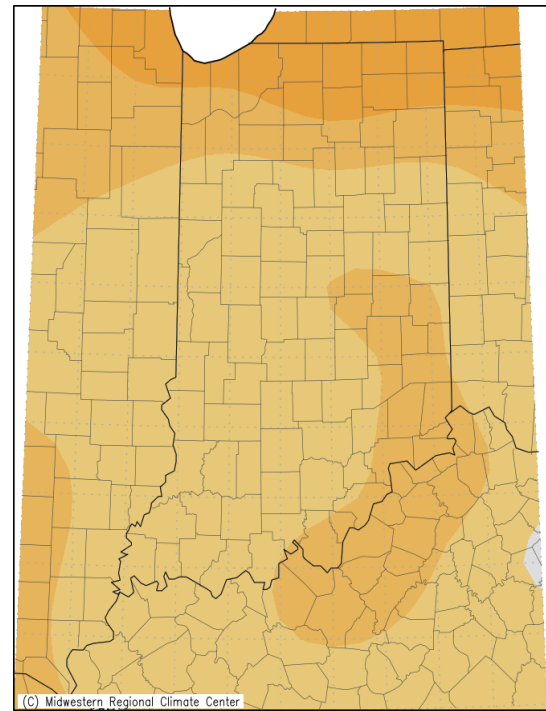
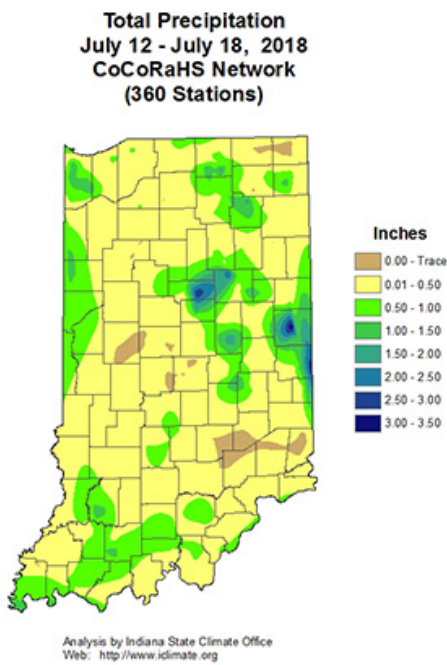
The data we collected this year reinforces the fact that we do not have very many hours in the real world where we can be completely compliant with the restrictions on the new dicamba product labels. The OISC is still receiving several dicamba-related complaints, and so far the pace of complaints is exceeding last year, so the story of how successful we have been at keeping dicamba in our target fields has yet to be fully determined. The fact remains that we need to have a backup plan in place for fields with an intended postemergence application of dicamba since our hours for legal applications are limited throughout the month of June.

## Total Precipitation July 12 – July 18, 2018

We are also aware that many areas of the state were very dry in June.

## Mean July 10-16, 2018

Average Temperature (°F): Departure from Mean  
July 10, 2018 to July 16, 2018



Indiana State Climate Office [www.iclimat.org](http://www.iclimat.org)  
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Average Temperature Departure from