PURDUE UNIVERSITY | Extension - Entomology

Pest&Crop newsletter

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In This Issue

Moth Trappers Have Been Busy Counting…Look At The Following “Black Cutworm Pheromone Trap Report”

(John Obermeyer)

2023 Black Cutworm Pheromone Trap Report

(John Obermeyer)

		BCW Trapped					
		Wk 1 4/1/23 -	Wk 2 4/6/23-	Wk 3 4/13/23 -	Wk 4 4/20/23 -	Wk 5 4/27/23 -	Wk 6 5/4/23-
County	Cooperator	4/5/23	4/12/23	4/19/23	4/26/23	5/3/23	5/10/23
Adams	Roe/Mercer Landmark/Decatur	3	9*				
Allen	Anderson/Indigoag/Churubusco	0	1				
Allen	Gynn/Southwind Farms/Ft. Wayne	1	2				
Allen	Kneubuhler/G&K Concepts/Harlan	61*	50*				
Bartholomew	Bush/Top Crop Alliance/Columbus	0					
Benton	Nally/Dairyland Seeds/Remington	1	11				
Clay	Mace/Ceres Solutions/Brazil	4	1				
Clay	Fritz/Ceres Solutions/Clay City	5	0				
Clinton	Emanuel/Frankfort	19*	11				
Daviess	Brackney/Daviess Co. CES/Montgomery	1					
Dubois	Eck/Dubois Co. CES/Jasper	14	21*				
Elkhart	Kauffman/Crop Tech/Millersburg	5	30*				
Fountain	Mroczkiewicz/Syngenta/Attica	39*	21*				
Hamilton	Campbell/Beck’s Hybrids	54*	37*				
Hendricks	Nicholson/Nicholson Consulting/Danville		5				
Hendricks	Tucker/Bayer/Brownsburg						
Howard	Shanks/Clinton Co. CES/Kokomo	0	2				
Jasper	Overstreet/Jasper Co. CES/Rensselaer	65*	3				
Jasper	Ritter/Dairyland Seeds/McCoysburg	0	9				
Jay	Boyer/Davis PAC/Powers	2	2				
Jay	Shrack/Ran-Del Co-Alliance/Parker City	37*	21*				
Jennings	Bauerle/SEPAC/Butlerville	42*	8				
Knox	Clinkenbeard/Ceres Solutions/Edwardsport	0	5				
Knox	Edwards/Ceres Solutions/Fritchton	1	4				
Kosciusko	Jenkins/Ceres Solutions/Mentone	13	24*				
Lake	Kleine/Rose Acre Farms/Cedar Lake	151*	948				
Lake	Moyer/Dekalb Hybrids/Shelby	5	16				
Lake	Moyer/Dekalb Hybrids/Schneider	0	1				
LaPorte	Rocke/Agri-Mgmt. Solutions/Wanatah	26*	27*				
Miami	Early/Pioneer Hybrids/Macy	0					
Montgomery	Delp/Nicholson Consulting/Waynetown	13					
Newton	Moyer/Dekalb Hybrids/Lake Village	2	4				
Perry	Lorenz/Lorenz Farms/Rome 1	0	6				
Perry	Lorenz/Lorenz Farms/Rome 2	0	0				
Porter	Boyer/PPAC/Wanatah	16*	39*				
Porter	Freyenberger/Dairyland Seeds/Kouts						
Posey	Schmitz/Purdue CCSI/ Blairsville	0	4				
Posey	Schmitz/Posey Co. CES/Cynthiana	0	1				
Pulaski	Leman/Ceres Solutions/Francesville						
Putnam	Nicholson/Nicholson Consulting/Greencastle	15*	5				
Randolph	Boyer/DPAC/Farmland	5	9				
Rush	Schelle/Falmouth Farm Supply/Carthage		0				
Scott	Tom Springstun/Scott Co. CES/Scottsburg	0	1				
Shelby	Fisher/Shelby County Coop/Shelbyville						
St. Joseph	Carbiener/Breman	0	25*				
Sullivan	McCullough/Ceres Solutions/Farmersburg	2	3				
Sullivan	McCullough/Ceres Solutions/Dugger		0				
Tippecanoe	Bower/Ceres Solutions/Lafayette	33*	53*				
Tippecanoe	Nagel/Ceres Solutions/W. Lafayette	17*	36*				
Tippecanoe	Obermeyer/Purdue Entomology/ACRE	19*	31				
Tippecanoe	Westerfeld/Bayer Research Farm/W. Lafayette	15*	6				
Tipton	Campbell/Beck’s Hybrids	2	1				

		BCW Trapped					
		Wk 1 4/1/23 -	Wk 2 4/6/23- 4/12/2	Wk 3 4/13/23 -	Wk 4 4/20/23 -	Wk 5 4/27/23 -	Wk 6 5/4/23- 5/10/2
County	Cooperator	4/5/23	3	4/19/23	4/26/23	5/3/23	3
Vigo	Lynch/Ceres Solutions/Clinton	2	1				
Whitley	Emley/NEPAC/Schrader	74*	76*				
Whitley	Emley/NEPAC/Kyler	32*	15				

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

Armyworm Pheromone Trap Report – 2023

(John Obermeyer)

County/Cooperator	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11
Dubois/SIPAC Ag Center	0	80									
Jennings/SEPAC Ag Center	21	20									
Knox/SWPAC Ag Center	37	242									
LaPorte/Pinney Ag Center	60	296									
Lawrence/Feldun Ag Center	159	99									
Randolph/Davis Ag Center	57	0									
Tippecanoe/Meigs	36	56									
Whitley/NEPAC Ag Center	0	259									

Wk 1 = 4/1/23-4/5/23; Wk 2 = 4/6/23-4/12/23; Wk 3 = 4/13/23-4/19/23; Wk 4 = 4/20/23-4/26/23; Wk 5 = 4/27/23-5/3/23; Wk 6 = 5/4/23-5/10/23; Wk 7 = 5/11/23-5/17/23; Wk 8 = 5/18/23 – 5/24/23; Wk 9 = 5/25/23-5/31/23; Wk 10 = 6/`/23-6/7/23; Wk 11 = 6/8/23-6/14/23

The Process Of Emergence Of Corn

(Dan Quinn)

Once the corn seed is planted, the waiting game for the first corn plants to emerge begins, which also means assessing (or worrying) if any issues had occurred. Corn typically requires about 100 to 120 growing degree days (GDDs) to emerge, which means both air and soil temperatures have a large influence on corn emergence timing from the soil. For example, if soil temperatures are warm, corn can emerge in as little as 4 – 5 days, whereas if soil temperature are cool, it may take upwards of 20 – 30 days to emerge. In addition, factors such as residue coverage, seed depth, and soil moisture may also influence soil temperature and emergence timing. Therefore, just because your thermometer in the soil says 50 degrees F, doesn't mean that the corn plant won't take a while to emerge and potentially be exposed to issues before emergence occurs, especially if soil temperatures remain at or around 50 degrees F. As a reminder, to calculate growing degree days, calculate the average daily air temperature (high + low)/2 and subtract the base temperature, which for corn is 50 degrees F. In addition, if the daily high and low temperatures are above and below 86 degrees and 50 degrees, respectively, then use the actual temperatures. However, if the temperatures are above 86 degrees or below 50 degrees, then use 86 degrees or 50 degrees in the formula.

The emergence process in corn starts with the elongation of the mesocotyl (a white, stemlike tissue that connects the seed to the base of the coleoptile and is essential for transferring energy from the seed to the young corn seedling), which moves the coleoptile (a protective sheath that surrounds the primary shoot, inner leaves and is first noticeable as corn begins to break the soil surface) toward the surface of the soil. Once the coleoptile tip has reached the soil surface, light exposure will disrupt the elongation and cause it to stop. Interestingly, once elongation is stopped, the depth of the coleoptile base will typically remain constant at ~ ¾ inches below the soil surface and you can use the length of the mesocotyl + ¾ inches to help determine how deep the corn was planted. Once the coleoptile has reached the soil surface (often known as the VE growth stage), exposure to sunlight will cause the coleoptile tip to soften and allow for the expansion of the inner leaves and the first true leaf to emerge from the tip of the coleoptile. In certain cases, corn emergence issues may occur due to the coleoptile splitting underground and causing premature leaf emergence below the soil surface. Factors which can cause this issue include exposure to sunlight (poor seed furrow closure), herbicide injury (corkscrew coleoptile), surface crusting and/or sidewall compaction (corkscrew coleoptile), and cold injury (corkscrew mesocotyl). Therefore, when assessing emergence and stand establishment issues in corn following planting, it is almost always important to take out the shovel and assess the corn plant and root health belowground.

Additional Resources:

Nielsen, R.L. 2020. The emergence process in corn. Corny News Network. Purdue Univ. Ext. https://www.agry.purdue.edu/ext/corn/news/timeless/emergence.html#:~:text=As%20with%20all%20of%20corn,as%20little%20as%204%20days.

When Is The Best Time To Plant Corn?

(Dan Quinn)

As spring approaches and farmers and agronomists begin to get anxious as corn planting approaches, the question that often arrives each year is when is the best time to begin planting? This question is often argued between farmers and agronomists, with farmers often wanting to plant earlier and agronomists often advising them to wait. This argument is often followed by an "I told you so" by one or the other at the end of the year, depending on growing season conditions and harvest results.

In Indiana, the optimum planting "window" for maximum corn yield potential occurs between April 20 and May 10 of each year. For the southern counties in the state, this "window" may be shifted one week earlier and for the northern counties in the state, this "window" may be shifted one week later. Overall, when examining previous year planting progress for Indiana from USDA-NASS crop reports, planting progress typically begins to increase around the 20th of April, with the majority of planting finishing toward the end of May. Previous research has shown that corn yield potential begins to decrease approximately 0.3% per day once planting is delayed beyond May 1st and approximately 1% per day if corn planting is delayed until the end of May. These decreases in corn yield potential are often contributed to a shortened growing season, elevated pest pressure, and increased potential for high heat and dry conditions during pollination. However, it is important to understand that delayed planting may only impact potential yield and not actual yield in a specific year. Just because corn was planted late, doesn't mean high yields won't be achieved. Many different factors and conditions beyond planting date can impact actual corn yield throughout the season and in certain instances, late-planted corn can out yield early-planted corn due to exposure to various conditions throughout the season. It is important to remember that chasing a calendar date to get corn planted is often not the smartest decision. For example, chasing a calendar date can result in corn being planted in

less-than-ideal soil conditions causing issues such as compaction, poor root growth, uneven emergence, and seedling disease which ultimately result in lower yield.

Soil temperature is also always a hot topic each year as planting approaches. Pictures of digital thermometers placed in the soil are often shared as everyone waits for the infamous 50°F to be achieved to begin planting. However, it is important to remember that corn typically needs 115 growing degree days to emerge and if the soil temperature is at 50°F and continues to average only 50°F for a length of time, corn can take upwards of 35 days to emerge. Whereas, if corn is planted into a soil with a daily average temperature of 65°F, emergence can occur in 7 days or less. The overall goal is to achieve rapid emergence of corn plants to shorten the period an emerging plant is exposed to certain stresses, limit the potential for uneven emergence, and also achieve more stress tolerant plants. The bottom line is that when corn planting season is approached, it is more important to pay attention to specific soil conditions and the upcoming weather forecast, rather than chasing a specific calendar date or a specific soil temperature of 50°F when choosing to make the decision to start planting.

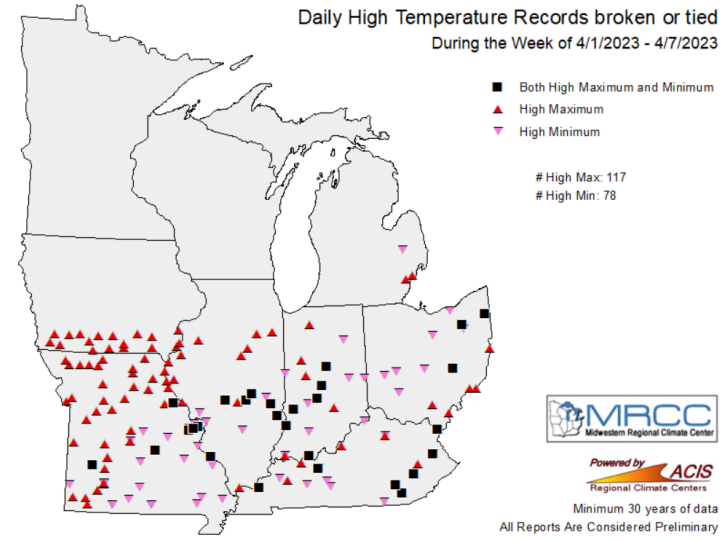

Figure 2: Midwest daily high temperature records broken or tied during the week of April 1-7, 2023.

Warm Temperatures, Dry Window Allows For Field Activity April 12, 2023

(Austin Pearson)

Much like March, April has gotten off to a warm start. Through the first eleven days, the state average temperature was 5.1°F above the 1991-2020 climatological normal (Figure 1). High temperatures ranged from 60-70°F, which was anywhere from 3-7°F above normal. Low temperatures were not as anomalous, but slightly above normal for most of the state. As a result, over a dozen Indiana stations either had daily high maximum and/or minimum temperature records broken or tied (Figure 2). Modified Growing Degree Days (MGDDs), derived by temperatures beginning April 1, were above normal for most of the state. Highest deviations occurred in central and southern Indiana (Figure 3). Warmer temperatures have allowed vegetation to break dormancy up to central Indiana. As a result, horticultural plants became susceptible to frost and freeze damage should there be another cold snap (Figure 4).

Climate Division Data by State between Two Dates
From Midwestern Regional Climate Center

Indiana
4/ 1/2023 to 4/11/2023

	Temperature			Precipitation			
cd	temp	norm	dev	prcp	norm	dev	percent
1	49.5	44.9	4.7	1.21	1.29	-0.09	93
2	49.4	44.3	5.1	1.27	1.36	-0.09	93
3	49.1	43.7	5.4	1.13	1.32	-0.19	86
4	52.1	47.0	5.1	1.08	1.35	-0.27	80
5	51.6	46.3	5.2	1.15	1.46	-0.31	78
6	50.4	45.4	5.0	1.17	1.41	-0.24	83
7	56.0	50.7	5.3	1.70	1.39	0.31	123
8	55.6	50.1	5.5	1.85	1.48	0.38	126
9	53.5	49.0	4.5	1.88	1.53	0.35	123
State	52.0	46.9	5.1	1.37	1.40	-0.03	98

Midwestern Regional Climate Center
MRCC Applied Climate System
Generated at:
Wed Apr 12 08:12:23 CDT 2023

Figure 1: Indiana climate division and state temperature, normal temperature, temperature departure from normal, precipitation, normal precipitation, precipitation departure from normal, and percent of mean precipitation for April 1-11, 2023.

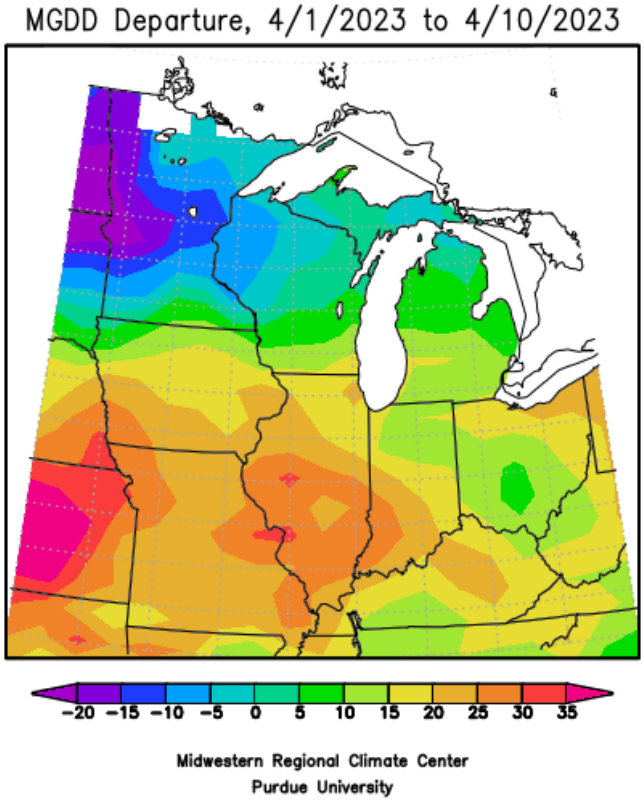

Figure 3: Accumulated Midwest Modified Growing Degree Days (MGDDs) (April 1-10, 2023) represented as the departure from the 1991-2020 climatological normal.

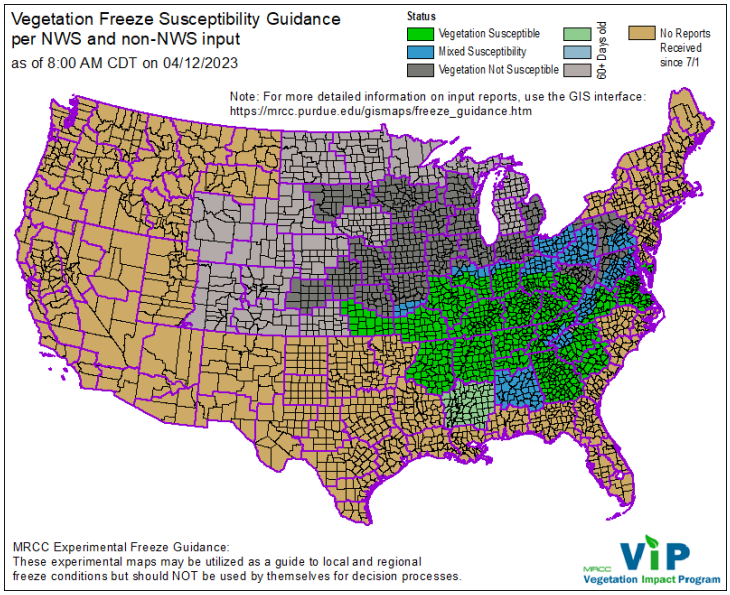

Figure 4: Vegetation Impact Program's Vegetation Freeze Guidance shows the locations with susceptibility to frost and or freeze damage. The map above depicts guidance submitted through April 12, 2023.

Rainfall averaged 1.37 inches across the state (April 1-11), with highest amounts falling in southern Indiana (Figure 1). All of the rain was measured in the first week and occurred nearly a week ago. Dry weather and abundant sun allowed soils to begin drying and warming. On April 12, Purdue Mesonet 4" soil temperatures were in the low to mid-50s statewide (Figure 5). Field work (anhydrous applications, spraying, and yes...even some planting) has begun for some producers given the recent pattern shift.

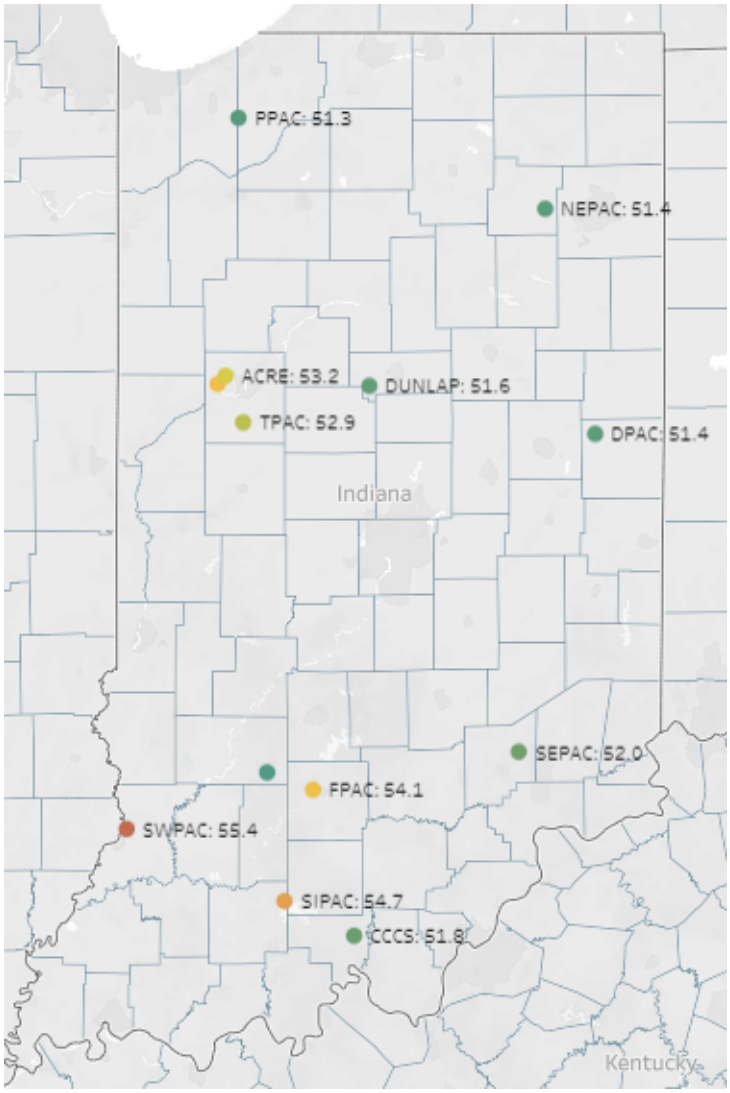

Figure 5: Purdue Mesonet 4" soil temperature across the state. Data may be obtained through the Purdue Mesonet Data Hub.

The dry trend should remain for the next week, which will allow for continued field work. The Climate Prediction Center expects near- to above-normal temperatures through the end of the month. Precipitation is expected to continue below normal through April 21 and then shifting to near normal toward the end of the month.

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