PURDUE UNIVERSITY Extension - Entomology

Pest&Crop newsletter

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2023 Black Cutworm Pheromone Trap Report

(John Obermeyer)

		BCW Trapped					
County	**Cooperator**	**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**
Adams	Roe/Mercer Landmark/Decatur	3	9*	5	22*		
Allen	Anderson/Indigoag/Churubusco	0	1	0			
Allen	Gynn/Southwind Farms/Ft. Wayne	1	2	3	3		
Allen	Kneubuhler/G&K Concepts/Harlan	61*	50*	26*	43*		
Bartholomew	Bush/Top Crop Alliance/Columbus	0	0	4	8		
Benton	Nally/Dairyland Seeds/Remington	1	11	21*	31*		
Clay	Mace/Ceres Solutions/Brazil	4	1	0	1		
Clay	Fritz/Ceres Solutions/Clay City	5	0	3	11*		
Clinton	Emanuel/Frankfort	19*	11	12	6		
Daviess	Brackney/Daviess Co. CES/Montgomery	1	0	0	5		
Dubois	Eck/Dubois Co. CES/Jasper	14	21*	12	6		
Elkhart	Kauffman/Crop Tech/Millersburg	5	30*	8	8		
Fountain	Mroczkiewicz/Syngenta/Attica	39*	21*	47*	38*		
Hamilton	Campbell/Beck's Hybrids	54*	37*	22*	13		
Hendricks	Nicholson/Nicholson Consulting/Danville		5	10	24*		
Hendricks	Tucker/Bayer/Brownsburg			21*			
Howard	Shanks/Clinton Co. CES/Kokomo	0	2	5	3		
Jasper	Overstreet/Jasper Co. CES/Rensselaer	65*	3	4	0		
Jasper	Ritter/Dairyland Seeds/McCoysburg	0	9	10	11		
Jay	Boyer/Davis PAC/Powers	2	2	10	8		
Jay	Shrack/Ran-Del Co-Alliance/Parker City	37*	21*	37*	27*		
Jennings	Bauerle/SEPAC/Butlerville	42*	8	5	2		
Knox	Clinkenbeard/Ceres Solutions/Edwardsport	0	5	8	37*		
Knox	Edwards/Ceres Solutions/Fritchton	1	4	3	6		
Kosciusko	Jenkins/Ceres Solutions/Mentone	13	24*	24*	8		
Lake	Kleine/Rose Acre Farms/Cedar Lake	151*	94*	52*	16		
Lake	Moyer/Dekalb Hybrids/Shelby	5	16	19*	6		
Lake	Moyer/Dekalb Hybrids/Schneider	0	1	9	7		
LaPorte	Rocke/Agri-Mgmt. Solutions/Wanatah	26*	27*	27*	6		
Miami	Early/Pioneer Hybrids/Macy	0	7	1	1		
Montgomery	Delp/Nicholson Consulting/Waynetown	13		19*	36*		
Newton	Moyer/Dekalb Hybrids/Lake Village	2	4	6	2		
Perry	Lorenz/Lorenz Farms/Rome 1	0	6	1	0		
Perry	Lorenz/Lorenz Farms/Rome 2	0	0	0	0		
Porter	Boyer/PPAC/Wanatah	16*	39*	27*	17		
Porter	Freyenberger/Dairyland Seeds/Kouts			0	1		
Posey	Schmitz/Purdue CCSI/ Blairsville	0	4	10	5		
Posey	Schmitz/Posey Co. CES/Cynthiana	0	1	0	0		
Pulaski	Leman/Ceres Solutions/Francesville		44*	28*	42		
Putnam	Nicholson/Nicholson Consulting/Greencastle	15*	5	19*	18*		
Randolph	Boyer/DPAC/Farmland	5	9	18*	16		
Rush	Schelle/Falmouth Farm Supply/Carthage		0	5	2		
Scott	Tom Springstun/Scott Co. CES/Scottsburg	0	1	5	5		
Shelby	Fisher/Shelby County Coop/Shelbyville		0	3			
St. Joseph	Carbiener/Breman	0	25*	42*			
Sullivan	McCullough/Ceres Solutions/Farmersburg	2	3	7	1		
Sullivan	McCullough/Ceres Solutions/Dugger		0	5	3		
Tippecanoe	Bower/Ceres Solutions/Lafayette	33*	53*	28*	26*		
Tippecanoe	Nagel/Ceres Solutions/W. Lafayette	17*	36*	42*	29*		
Tippecanoe	Obermeyer/Purdue Entomology/ACRE	19*	31	55*	26*		
Tippecanoe	Westerfeld/Bayer Research Farm/W. Lafayette	15*	6	20*	9		
Tipton	Campbell/Beck's Hybrids	2	1	9	14		
Vigo	Lynch/Ceres Solutions/Clinton	2	1	0	2		
Whitley	Emley/NEPAC/Schrader	74*	76*	58*	11		
Whitley	Emley/NEPAC/Kyler	32*	15	5	13		

* = 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	56	14							
Jennings/SEPAC Ag Center	21	20	39	8							
Knox/SWPAC Ag Center	37	242	46	26							
LaPorte/Pinney Ag Center	60	296	216	54							
Lawrence/Feldun Ag Center	159	99	197	70							
Randolph/Davis Ag Center	57	0	0	2							
Tippecanoe/Meigs	36	56	51	8							
Whitley/NEPAC Ag Center	0	259	179	13							

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

Spring Burndown Considerations: Air Temps And Herbicide Efficacy

(Bill Johnson) & *(Marcelo Zimmer)*

In the Spring, growers may experience challenges when controlling winter annuals weeds or terminating cover crops with glyphosate-based burndown herbicide programs, specifically when glyphosate is sprayed in cool, cloudy weather conditions or tank mixed with residual herbicides, ATS, or synthetic auxins (issue mostly for grasses). In 2018, we conducted cover crop trials at a couple of locations and were able to capture some good images and weather information around those treatments. The purpose of this article is to provide some recommendations on how to achieve good herbicide efficacy during spring burndown and share our data and experiences with this situation in 2018.

During that year, we conducted cover crop experiments at three different Purdue Agricultural Centers. One of the trial objectives was to look at the influence of termination timing on herbicide efficacy, weed suppression, and crop yields. Our cereal rye experiment provided a good data set to look at the influence of air temperatures on glyphosate and glyphosate plus atrazine activity. In Table 1, we are showing the data for two of our sites, Throckmorton Purdue Agricultural Center (TPAC) near Lafayette Indiana, and the Southeast Purdue Agricultural Center (SEPAC) near Butlerville, Indiana. In Table 1 we can see the daytime high and low temperatures for the two days prior to spraying, spray day, and the next two days after that. At TPAC, you can see that the two days before spraying we had daytime air temps that got up in the 50s and 60s, but nighttime air temps that got as low as 29° on the day of spraying. The next two days after the spray treatment was made, our nighttime air temps got down as low as 29°. If we look at the SEPAC information, we can see that the two days before spraying, and the day of spraying nighttime air temps were down in the 30s and low 40s. The day after spraying, we had a nighttime low of 42.

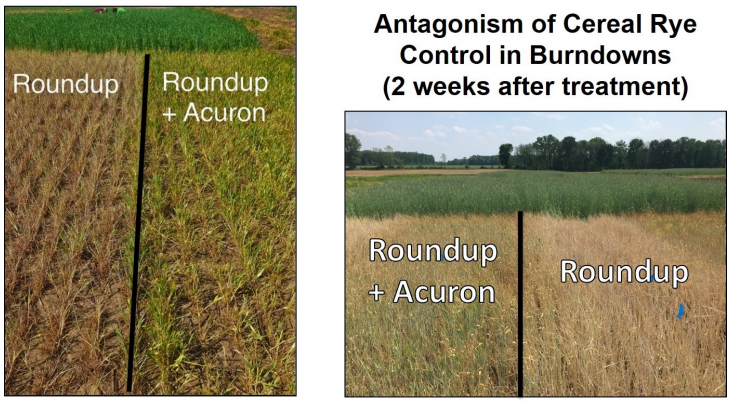
In Figure 1, you can see images from the two research sites. At both sites, you can see that Roundup (glyphosate) alone is providing more control then Roundup plus Acuron (atrazine + s-metolachlor + mesotrione + bicyclopyrone) at two weeks after treatment. The common thread with these results is the influence of cool nighttime temperatures on herbicide activity and the antagonistic effect of atrazine on grass control with glyphosate. For many years we focused our attention mostly on daytime air temperatures and its influence on herbicide activity. In our data set, daytime temps are mostly in the 50's and above. However, over the last 8 to 10 years we have become more educated on the influence of nighttime air temps on herbicide activity. The moral of the story is that daytime air temperatures may seem ideal for herbicide activity, but night time air temperatures can cause plants to slow their growth rates or shut down. We know that if plants aren't actively growing, herbicide efficacy is reduced for translocated (systemic) herbicides. Our general rule of thumb is that we want daytime air temperatures in the 50s and 60s and nighttime temperatures in the 40s or higher to assure plants are actively growing and maximize the effectiveness of postemergence herbicides.

Depending on how the weather conditions develop this spring, we must also be careful about adding residual herbicides when terminating cover crops or controlling weedy grasses for a couple of reasons:

- If the residual herbicide is sprayed onto large amounts of biomass, the residual may never hit the ground to do its job.
- Residual herbicides sprayed under less than ideal weather conditions can antagonize glyphosate and reduce control of grasses (like wheat, cereal rye, annual ryegrass). This occasionally happens when herbicides such as flumioxazin, metribuzin, sulfentrazone, or atrazine are mixed with glyphosate. To avoid problems, increase the rate of glyphosate or spray the products separately.
- Herbicides such as 2,4-D or dicamba can be added if there are broadleaf species in the mix or if glyphosate-resistant weeds such as marestail or giant ragweed are present at cover crop termination. Keep in mind that these herbicides have preplant restrictions for soybeans unless you are planting soybean genetics such as Xtend/XtendFlex (dicamba-resistant) or Enlist (2,4-D-resistant) or planting corn. In addition, synthetic auxin herbicides such as 2,4-D and dicamba may also reduce grass control with glyphosate; therefore, growers should increase the rate of glyphosate in tank mixes to avoid problems.

Table 1. Low and high air temperatures (°F) for two days before termination application to two days after application.

	TPAC Low	TPAC High	SEPAC Low	SEPAC High
2 days before application	50	60	41	55
1 day before application	39	50	30	59
Day of application	29	65	33	71
1 day after application	29	65	42	80
2 days after application	35	54	59	82



May 8, 2018 - TPAC **May 14, 2018 – SEPAC**

Figure 1. Picture of Roundup alone compared to Roundup + Acuron two weeks after herbicide application to terminate cereal rye.

Poison Hemlock

(Bill Johnson) & *(Marcelo Zimmer)*

The presence of poison hemlock (*Conium maculatum* L.) in pastures, fencelines, and field edges (Figure 1) is a frequent concern in many parts of Indiana during the Spring. This plant can be noticed very early in the spring, as it is typically one of the first weeds to green up, usually in late February to early March if temperatures are favorable. The appearance of poison hemlock on roadsides and fencerows of Indiana is not new as we can find articles in the Purdue Weed Science database

dating back to 2003. The largest threat of this weed is the toxicity of its alkaloids if ingested by livestock or humans, but it can also reduce the aesthetic value of landscapes and has been reported to creep into no-till corn and soybean fields as well.

Figure 1. Poison hemlock infestation on roadside (*Photo Credit: Travis Legleiter*)

Biology and Identification

Poison hemlock is a biennial weed that exists as a low-growing herb in the first year of growth (Figure 2) and bolts to three to eight feet tall in the second year, when it produces flowers and seed (Figure 3). It is often not noticed or identified as a problem until the bolting and reproductive stages of the second year. The alternate compound leaves are pinnate (finely divided several times) and are usually triangular in outline. Flowers are white and occur in an umbel inflorescence. Poison hemlock is often confused with wild carrot but can be distinguished by its lack of hairs and the presence of purple blotches on the stems.

Figure 2. Poison hemlock rosette (*Photo Credit: Travis Legleiter*)

Figure 3. Flowering poison hemlock plant (*Photo Credit: Purdue Plant and Pest Diagnostic Lab*)

Toxic Properties

Poison hemlock contains five alkaloids that are toxic to humans and livestock and can be lethal if ingested. The plant's alkaloids may also be absorbed through the skin, so if you find yourself hand pulling poison hemlock, it would be a good idea to wear gloves. All parts of the plants contain the toxic alkaloids with levels being variable throughout the year. Symptoms of toxicity include nervousness, trembling, and loss of coordination followed by depression, coma, and/or death. Initial symptoms will occur within a few hours of ingestion.

Cases of poisoning due to poison hemlock ingestion are rare as the plants emit a mousy odor that makes them undesirable and unpalatable to livestock and humans. Consumption and toxicity in animals usually occur in poorly managed or overgrazed pastures where animals are forced to graze poison hemlock because of lack of desirable forages.

Control

Control of poison hemlock with herbicides is most effective when applied to plants in the first year of growth or prior to bolting and flowering in the second year. The closer to reproductive stages, the less effective the herbicide. In roadside ditches, pastures, and waste areas, herbicides containing triclopyr (Remedy Ultra, Garlon, many others) or triclopyr plus 2,4-D (Crossbow, Crossroad) are most effective in controlling poison hemlock. Other herbicides that provide adequate control when applied at the proper timing are dicamba (Clarity, many others), metsulfuron-methyl (Escort XP), metsulfuron-methyl plus dicamba plus 2,4-D (Cimarron Max) and clopyralid plus 2,4-D (Curtail). For no-till fields, mixtures of 2,4-D plus dicamba will be most effective

for fields going to soybean. Be sure to pay attention to preplant intervals when these herbicides are used in the spring. Preplant intervals will vary based on the soybean herbicide-resistance trait to be planted and whether or not 2,4-D and dicamba were used together to control the weed. For fields going to corn, mesotrione (Callisto™ and other names) and mesotrione premixes + 2,4-D or dicamba have been effective in reducing infestations along field edges.

For further information on toxic plants in Indiana refer to the Purdue University Weed Science Guide to Toxic Plants in Forages (https://www.extension.purdue.edu/extmedia/WS/WS_37_ToxicPlants08.pdf).

Cressleaf Groundsel (Packera glabella)

(Marcelo Zimmer) & *(Bill Johnson)*

Every spring we receive several calls and e-mails about a certain 3-foot tall weed with yellow flowers (Figure 1). The most common yellow-flowered weeds we have in Indiana are cressleaf groundsel, the buttercup species, and dandelion. Occasionally, we have some fields of canola or rapeseed in the state. But, by far the most prevalent specie we see in no-till corn and soybean fields, and occasionally pastures, is cressleaf groundsel. I have only rarely observed wild mustard in Indiana. Wild mustard is more common in the northern tier of states near the Canadian border. This year, field activities were delayed due to cool temperatures and frequent precipitation. These weather conditions also allowed cressleaf groundsel to reach the reproductive stage, and it is currently flowering in many Indiana fields that haven't been worked yet. This article is intended to provide information on the biology and life cycle of cressleaf groundsel, as well as how to control it in fields and pastures.

Figure 1. Cressleaf groundsel plant (*Photo Credit: Marcelo Zimmer*).

Biology and Identification

Cressleaf groundsel is a winter annual weed that has become more prevalent in Indiana pastures and agronomic crop ground over the past decade (Figure 2). The small seeds produced by this weed allow it to thrive in reduced and no-till systems as well as poorly established pastures. Cool and wet springs of the past few years have also favored cressleaf groundsel, as it is a weed that prefers moist soils and typically struggles in hot and dry weather.

Figure 2. Field infested with cressleaf groundsel at the SEPAC farm (*Photo Credit:*

Glenn Nice).

Figure 3. Cressleaf groundsel rosette early in the spring (*Photo Credit: Plant & Pest Diagnostic Laboratory*).

Figure 3. Cressleaf groundsel rosette early in the spring (*Photo Credit: Plant & Pest Diagnostic Laboratory*).

Much like most winter annual weeds, cressleaf groundsel emerges as a rosette in the fall then bolts, flowers, and produces seed in the spring. Basal rosette leaves are deep pinnate serrations with roundly lobed leaf margins (Figure 3). Leaves are typically 2 to 10 inches in length (Britton and Brown 1970). Bolting stems are hollow and can reach up to three feet in height with inflorescences that contain six to twelve yellow ray flowers that are often compared to the flowers of common dandelion (Figure 4). When looking for cressleaf groundsel in older weed id or taxonomic guides be aware that it has traditionally been placed in the *Senecio* genus and only recently was placed into the *Packera* genus.

Figure 4. Cressleaf groundsel has hollow stems (*Photo Credit: Marcelo Zimmer*).

Toxic Properties

The competitiveness of cressleaf groundsel with agronomic crops has not been researched, though its presence as a winter annual in no-till fields will have the same implications of slowing soil warming and drying as other winter annual weeds. The presence of this weed in pastures and hayfields should be of more concern as it does contain toxic properties when ingested by livestock. Leaves, flowers, and seeds of cressleaf groundsel contain alkaloids that will cause liver damage in livestock, which is termed seneciosis, and typically occurs on a chronic level (Kingsbury 1964). Symptoms of seneciosis are loss of appetite, sluggish depressed behavioral patterns, and in extreme cases aimless walking without regard to fences or structures. Although cressleaf groundsel is not as toxic as many of its relatives in the *Packera* genus, livestock producers encountering this weed in pastures or hay should take steps to avoid prolonged ingestion by animals.

Control

Herbicide applications for cressleaf groundsel control are most effective when applied to plants in the rosette stage. Plants that are larger, or bolting are very difficult to control with herbicides. Infestations in pastures can be controlled with 2,4-D or a combination of 2,4-D and dicamba applied to rosettes in the fall or early spring prior to bolting (Nice 2008). Producers should be aware that applications of these herbicides will also kill favorable broadleaves (legumes) that are present in pastures.

Control recommendations for cressleaf groundsel in no-till agronomic crop fields have typically been to apply 2,4-D @ 1 qt/A to actively growing rosettes in the fall. Research at the University of Illinois (Lake and Hager 2009) has shown that fall or spring applications of glyphosate (Roundup PowerMax II @ 22 to 44 oz/A plus liquid AMS @ 5% v/v) to 2-8 inch diameter rosettes can achieve 94% or greater control of cressleaf groundsel. We have observed that control of cressleaf groundsel with spring burndowns can be challenging if the plants are large and spray applications are made in cool weather. In situations like this, we often observe severe injury and necrosis of leaves, but new growth will appear from live buds on the plant. In some instances, resprays are needed to finish off the cressleaf groundsel.

References:

Britton N and A Brown (1970) An Illustrated Flora of the Northern United States and Canada. Volume 3. Dover Publications, Inc., New York. Pp 540-544.

Kingsbury KM (1964) Poisonous Plants of the United States and Canada. Pentice-Hall, Inc., Englewood Cliffs, N.J. pp 425-435.

Lake JT and AG Hager (2009) Herbicide Selection and Application Timing for Control of Cressleaf Groundsel (*Packera glabella*). Weed Technol. 23:221-224.

Nice G (2008) Guide to Toxic Plants and Forages. Purdue Extension Publication WS-37.

Soil Applied Herbicides and Rainfall for Activation

(Bill Johnson) & *(Marcelo Zimmer)*

Fieldwork has progressed slowly in the past week due to cool air and soil temperatures. At this point, there is still uncertainty about how the weather will develop in the next couple of weeks. As we approach May, growers are ready to start planting as soon as conditions allow. Many of these acres will receive soil-applied, residual herbicides for control of germinating weed seedlings. Soil-applied preemergence herbicides require moisture for activation. What this really means is that we want the herbicide to be dissolved in the soil water (aka “solution”) and moved down into the upper inch or two of the soil profile, so it can be taken up by the germinating weed seedling roots or shoots. When soil conditions are dry, herbicide molecules will remain closely associated with soil particles and are not able to move into weed seedlings via mass flow processes. As a result, weed control with soil-applied herbicides under dry conditions can be less than desirable.

We are asked quite often how much rainfall it takes to activate a soil-applied, residual herbicide. The answer depends on many factors, which include:

1) How water-soluble the herbicide is;

2) how sensitive the weed specie is to the specific active ingredient;

3) what stage is the weed seedling at when exposed to the herbicide;

4) did the weed seedling receive a high enough dose to overcome any natural herbicide tolerance or metabolism mechanisms;

5) how moist was the soil when the herbicide was applied.

As you can see, the answer to the question “how much moisture is required to activate my herbicide” requires consideration of several factors.

A quick review of several herbicide labels (but not all) shows the following edited comments with regards to precipitation and herbicide activation:

Single-Active Ingredient Products	Precipitation Required for Activation

Single-Active Ingredient Products	Precipitation Required for Activation
Metolachlor (Dual)	0.5 inches on coarse soils, 1 inch on fine-textured within 2 days after application
Dimethenamid-P (Outlook)	Nothing about precipitation amounts mentioned
Acetochlor (Harness/Degree)	0.25 to 0.75 inches within 7 days after application
Pyroxasulfone (Zidua)	When adequate moisture is not received after application, weed control may be improved by irrigation with at least 0.25-acre inch of water.
Flumioxazin (Valor)	0.5 inches before weed emergence
Sulfentrazone (Spartan)	If adequate moisture (0.5 to 1 inch) from rainfall or irrigation is not received within 7 to 10 days after application, a shallow incorporation may be needed to obtain desired weed control.
Atrazine (Aatrex)	Nothing about precipitation amounts mentioned
Metribuzin (Tricor)	In areas of low rainfall, preemergence applications to dry soils should be followed with light irrigation of 0.25-acre inch of water.
Isoxaflutole (Balance)	Most effective in controlling weeds when adequate rainfall is received within 14 days after application

Premixes	Precipitation Required for Activation
Acuron	Nothing about precipitation amounts mentioned
Degree Xtra	0.25 to 0.75 inches within 7 days after application
Corvus	Most effective weed control when applied and subsequently moved into the soil by rainfall, sprinkler irrigation or mechanical tillage prior to weed emergence within 14 days after application
Sonic	The amount of rainfall or irrigation required for activation following application depends on existing soil moisture, organic matter content and soil texture. If adequate moisture (0.5 to 1 inch) is not received within 7 to 10 days after the treatment with Sonic, a shallow cultivation may be needed to obtain desired weed control.
SureStart/TripleFlex	Precipitation or sprinkler irrigation of at least 0.25 inch is required to bring SureStart into contact with germinating seeds.
Verdict	Must be activated by at least 0.5 inch before weed seedling emergence

As you can see, the answer varies a bit by herbicide product. As a rule of thumb for most soil-applied herbicides, we would like to see about 0.75 to 1 inch of precipitation within the first week. Also, we would like to see approximately 2 inches of precipitation spread out over the first two weeks after the herbicide was applied for optimal herbicide performance.

If 10-14 days have passed without rainfall following a soil residual application and weeds are starting to break, consider the following:

- Start planning for a post herbicide application
- Use a rotary hoe to dislodge small seedlings and buy some time for a precipitation event to activate the herbicides
- Some herbicides can “reach back” or “recharge” on small annual weeds when rainfall occurs, although depending on this may be a little like buying a lottery ticket. The HPPD (Group 27) herbicides (Accuron, Balance, Corvus, Lumax, Lexar, Instigate, Prequel, etc.) tend to have better “reach back” potential than some other herbicides, and escaped grass control is probably of greater concern. The Group 5 herbicides (Photosystem II inhibitors) like atrazine, simazine, and metribuzin will also control small emerged susceptible broadleaves via root uptake.

Below-Normal Temperatures And Precipitation Continue

(Austin Pearson)

Despite the cooler weather we’ve experienced the last couple of weeks, temperatures from April 1st through 26th averaged 2.3°F above normal for the entire state (Figure 1). Departures have steadily declined as the weather pattern shifted to cold and dry as a result of an upper atmosphere blocking pattern. Since April 21st, temperatures averaged 9-12°F below normal, and a large portion of the state experienced a hard freeze on April 24th (Figure 2). Indianapolis recorded a low temperature of 28°F, which tied the record low set in 1910. Many locations experienced additional frost events throughout the week, posing a risk to nearly all horticultural crops.

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

Indiana
4/ 1/2023 to 4/26/2023

	Temperature			Precipitation			
cd	temp	norm	dev	prcp	norm	dev	percent
1	51.1	48.8	2.3	2.01	3.09	-1.09	65
2	51.1	48.3	2.8	1.94	3.09	-1.15	63
3	50.7	47.8	2.9	1.69	3.04	-1.35	56
4	52.9	50.8	2.0	1.98	3.28	-1.29	61
5	52.4	50.2	2.2	1.78	3.34	-1.56	53
6	51.7	49.2	2.5	1.74	3.27	-1.53	53
7	56.1	54.2	1.9	2.86	3.69	-0.83	77
8	55.9	53.6	2.3	2.58	3.71	-1.14	69
9	54.4	52.5	1.9	2.56	3.56	-0.99	72
State	53.0	50.7	2.3	2.13	3.35	-1.22	64

Midwestern Regional Climate Center
MRCC Applied Climate System
Generated at:
Thu Apr 27 06:42:23 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 1-26, 2023.

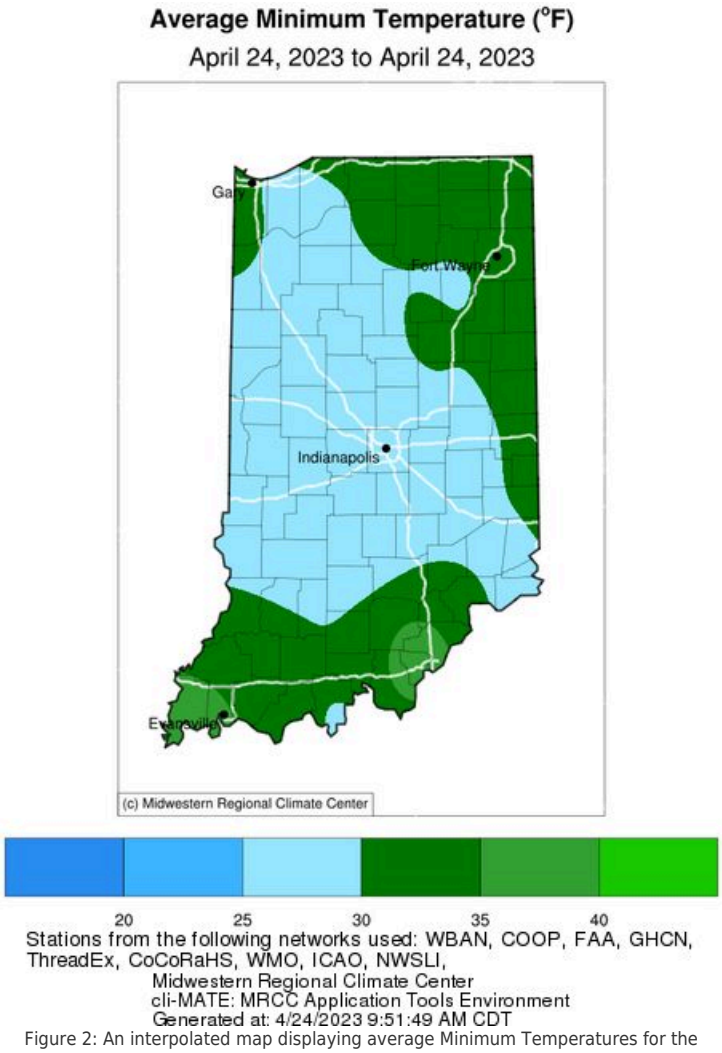


Figure 2: An interpolated map displaying average Minimum Temperatures for the April 24, 2023 freeze event.

Modified Growing Degree Days (MGDDs), being temperature driven, ran above normal for nearly the whole state (Figure 3). As of late, accumulations have slowed, and the highest departures occurred in northwestern Indiana. Soil temperatures have dropped slightly with the colder air temperatures but have continued to meander between 40-55°F statewide (Figure 4). Many producers planted over the past few weeks and have yet to see crops emerge, which is likely a good thing in light of the ongoing frost and freeze events. Soil moisture, especially in the topsoil, has dried due to the lack of rain and the rapid drying events this month (high wind, low humidity, abundant sun, etc.). Statewide, precipitation ran 1.22 inches below normal (64 percent of normal) for April 1st through 26th and does not look to rebound at least for the next couple of weeks.

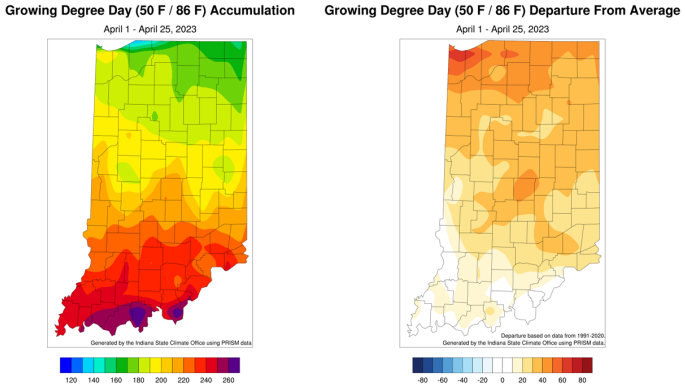


Figure 3: Total Accumulated Indiana Modified Growing Degree Days (MGDDs) April 1-25, 2023 (left) and Total Accumulated MGDDs represented as the departure from the 1991-2020 climatological normal (right).

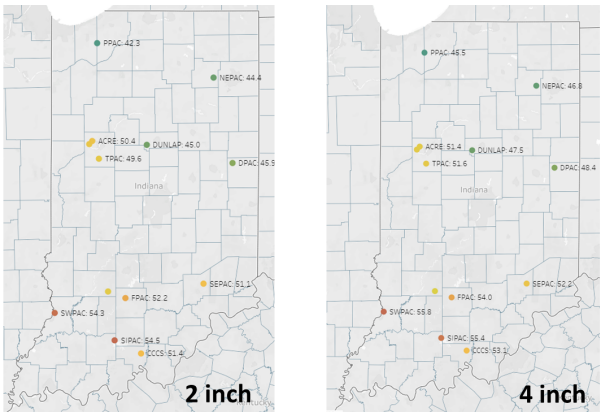


Figure 4: Two-inch (left) and four-inch (right) soil temperatures for stations located at Purdue Mesonet sites in Indiana. Data can be obtained from the Purdue Mesonet Data Hub.

The Weather Prediction Center's 7-day forecast expects 0.01-1.00 inch of precipitation, with the heaviest amounts along the Ohio River (Figure 5). This pattern continues providing agricultural producers the opportunity to conduct fieldwork. The Climate Prediction Center's (CPC) below-normal precipitation outlooks through May 10th (Figures 6 and 7) are also conducive to accessible fields. Let's get to the bad news, shall we? Temperatures do not look to rebound for the next couple of weeks as the CPC's outlooks indicate elevated chances for below-normal temperatures. Current models hint at a few days with warm temperatures sprinkled in, but overall, we're trending below normal through the first couple weeks of May. We certainly are not out of the woods for frost/freeze potential as models have low 30s forecast through May 5th. Be sure to pay attention to any alerts issued by your local National Weather Service Forecast Office.

Figure 5: NWS Weather Prediction Center 7-day quantitative precipitation forecasts for the continental United States.

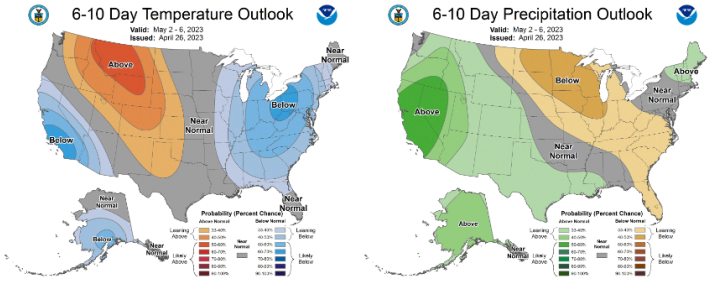


Figure 6: The CPC's 6–10-day temperature and precipitation outlooks, valid for May 2-6, 2023.

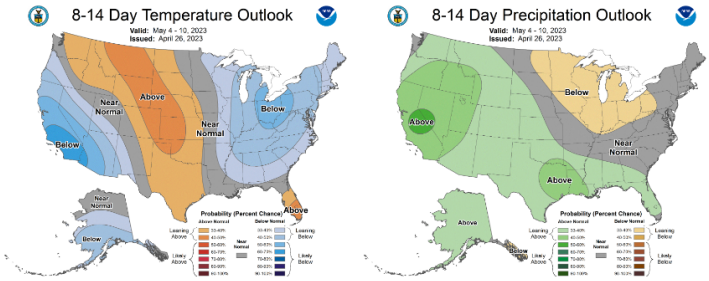


Figure 7: The CPC's 8-14-day temperature and precipitation outlooks, valid for May 4-10, 2023.

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