PURDUE UNIVERSITY Extension - Entomology

Pest&Crop newsletter

Issue: 2021.6
May 7, 2021

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

Active Week For Black Cutworm Moth Trappers, What's Next?

(John Obermeyer)

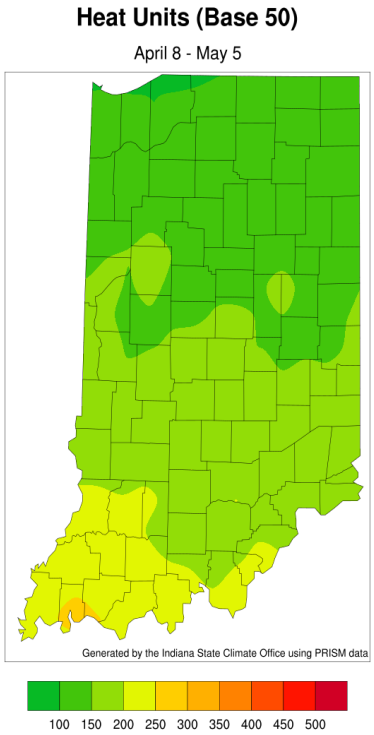
It is still believed that black cutworm does not over-winter in the Corn Belt, but rather they are carried here on weather fronts and literally "rain" on Indiana. So, every year is a reset with this pest. Referring to the "Black Cutworm Pheromone Trap Report," you see that many of our cooperators throughout the state trapped 9 or more moths in a two-night period, referred to as an "intensive capture." Pest managers understand that this is only one piece of the puzzle when it comes to determining if, and when, black cutworm threaten our crops.

Because black cutworm's egg hatch and larval development is triggered by heat (50°F threshold), it takes some time for them to reach the size to damage, and/or cut, corn seedlings, accumulation of about 300 heat units. The accompanying map, supplied by the Indiana State Climate Office, shows the approximate development of black cutworm larvae at the time of this writing. They, like the planted crops, are waiting for warmer temperatures to grow!

These hatching black cutworm larvae will need food (e.g., weeds) and much heat to reach the damaging stage. (*Photo Credit: John Obermeyer*)

Black cutworm does not concern corn producers as it did for decades, probably for two reasons, planting date and seed-applied insecticides. The trend with earlier/more planting and the improved hybrid's early vigor has likely allowed corn to outgrow larval development. Too, with virtually all corn seed treated with a seed-applied insecticide, there is systemic protection within the corn seedling. Though this translocated insecticide is short-lived, it is generally enough for early developing black cutworm larvae. It is important to note that this is not true with mid-later developed larvae. Think…black cutworm initially feeding and developing on weeds/cover crops and then shifting to emerging corn.

So, timing, and intensity, of moth captures allows us to begin tracking heat unit accumulations and anticipating larval development. I'm grateful to pheromone trappers from Posey to St. Joseph Counties that are watching and counting. Soon, as temperatures warm, it will be time for pest managers to take the next step, that is monitoring of seedling corn, especially in high-risk fields. Happy scouting!



Black cutworm require about 300 accumulated heat units (50°F base) from egg to damaging larvae.

Armyworm Pheromone Trap Report – 2021

(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	13	3	65	51						
Jennings/SEPAC Ag Center	0	1	0	7	7						
Knox/SWPAC Ag Center	0	6	1	10	35						
LaPorte/Pinney Ag Center	27	50	12	393	189						
Lawrence/Feldun Ag Center	14	62	7	434	717						
Randolph/Davis Ag Center	0	0	0	0	0						
Tippecanoe/Meigs	1	0	0	16	31						
Whitley/NEPAC Ag Center	0	0	0	18	20						

Wk 1 = 4/1/21-4/7/21; Wk 2 = 4/8/21-4/14/21; Wk 3 = 4/15/21-4/21/21; Wk 4 = 4/22/21-4/28/21; Wk 5 = 4/29/21-5/5/21; Wk 6 = 5/6/21-5/12/21; Wk 7 = 5/13/21-5/19/21; Wk 8 = 5/20/21 – 5/26/21; Wk 9 = 5/27/21-6/2/21; Wk 10 = 6/3/21-6/9/21; Wk 11 = 6/10/21-6/16/21

2021 Black Cutworm Pheromone Trap Report

(John Obermeyer)

		BCW Trapped						
County	Cooperator	Wk 1 4/1/21-4/7/21	Wk 2 4/8/21-4/14/21	Wk 3 4/15/21-4/21/21	Wk 4 4/22/21-4/28/21	Wk 5 4/29/21-5/5/21	Wk 6 5/6/21-5/12/21	Wk 7 5/13/21-5/19/21
Adams	Roe/Mercer Landmark	5	15	10*	4	34*		
Allen	Anderson/NICK	0	1	0	0	0		
Allen	Gynn/Southwind Farms	0	0	0	2	14*		
Allen	Kneubuhler/G&K Concepts	0	0	2	8	20*		
Bartholomew	Bush/Pioneer Hybrids	0	21*	6	2	11		
Boone	Emanuel/Boone Co. CES	1	1	3	5	22*		
Clay	Mace/Ceres Solutions/Brazil	6	7	2	12*	4		
Clay	Fritz/Ceres Solutions/Clay City	0	3	5	3	7		
Clinton	Emanuel/Boone Co. CES	1	12	10	6	30*		
Dubois	Eck/Dubois Co. CES	0	7	9	3	2		
Elkhart	Kauffman/Crop Tech	2	0	0	7	31*		
Fayette	Schelle/Falmouth Farm Supply Inc.	12	23*	29*	24*	46*		
Fountain	Mroczkiewicz/Syngenta	2	15*	4	15	28*		
Hamilton	Campbell/Beck's Hybrids	5	17*	6	17	56*		
Hancock	Gordon/Koppert Biological Systems				0	4		
Hendricks	Nicholson/Nicholson Consulting	0	1	3	8	5		
Howard	Shanks/Clinton Co. CES	0	0	0	1	4		
Jasper	Overstreet/Jasper Co. CES	0	0	0	2	2		
Jasper	Ritter/Dairyland Seeds	0	0	0	1	1		
Jay	Boyer/Davis PAC	0	29*	14	10	47*		
Jay	Liechty/G&K Concepts	2	13	6	21*	21*		
Jay	Shrack/Ran-Del Agri Services	1	16	1	16*	51*		
Jennings	Bauerle/SEPAC	0	22*	19	5	24*		
Knox	Clinkenbeard/Ceres Solutions/Westphalia	0	0	0	3	0		
Knox	Gretencord/Ceres Solutions/Fritchton	0	5	8	11*	4		
Kosciusko	Jenkins/Ceres Solutions/Mentone	0	0	0	6	9		
Lake	Kleine/Rose Acre Farms	3	22*	2	50*	71*		
Lake	Moyer/Dekalb Hybrids/Shelby	0	7	0	3	10		
Lake	Moyer/Dekalb Hybrids/Scheider	1	7	2	3	15		
LaPorte	Deutscher/Helena	0	4					
LaPorte	Rocke/Agri-Mgmt. Solutions	1	2	0	2	23*		
Marshall	Harrell/Harrell Ag Services	0	0	2	3	27*		
Miami	Early/Pioneer Hybrids	0	0	2	12	28*		
Montgomery	Delp/Nicholson Consulting	2	0	4	36*	87*		
Newton	Moyer/Dekalb Hybrids/Lake Village	1	5	3	2	5		
Porter	Tragesser/PPAC	0	3	0	4	22		
Posey	Schmitz/Posey Co. CES	–	2	0	0	2		
Pulaski	Capouch & Chaffins/M&R Ag Services		4	6	38*	32*		
Pulaski	Leman/Ceres Solutions/Francesville	3	5	4	16			
Putnam	Nicholson/Nicholson Consulting	0	7	8	10	11		
Randolph	Boyer/DPAC	0	2	4	2	8		
Rush	Schelle/Falmouth Farm Supply Inc.	0	14*	0	1	0		
Stark	Capouch & Chaffins/M&R Ag Services, NW		0	0	0	1		
Stark	Capouch & Chaffins/M&R Ag Services, SE		0	0	0	1		
St. Joseph	Carbiener, Breman	2	2	1	10	30*		
St. Joseph	Deutscher/Helena Agri-Enterprises	0	3					
Sullivan	McCullough/Ceres Solutions/Farmersburg	0	0	2	3	4		
Tippecanoe	Bower/Ceres Solutions/Lafayette	2	0	0	8	20*		
Tippecanoe	Nagel/Ceres Solutions/W. Lafayette	4	22*	23*	48*	74*		
Tippecanoe	Obermeyer/Purdue Entomology/ACRE	1	5	2	13	24*		
Tippecanoe	Westerfeld/Bayer Research Farm/W. Lafayette	0	3	2	2	11		
Tipton	Campbell/Beck's Hybrids	4	10	3	9	25*		
Vermillion	Lynch/Ceres Solutions/Clinton	0	0	0	0	0		
White	Foley/ConAgra/Brookston	3	3	2	3	1		
Whitley	Boyer/NEPAC/Schrader	0	6	0	10	12		
Whitley	Boyer/NEPAC/Kyler	–	–	0	10	16		

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

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, due to recent cooler weather, cressleaf groundsel is flowering later than it did last year. 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: Joe Ikley*)

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 20 years (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 Southeast Purdue Agricultural Center. (*Photo Credit: Glenn Nice*)

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. 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 3). 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 3. Cressleaf groundsel flower (Photo: Joe Ikley)

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 hay fields 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 that 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 control of cressleaf groundsel 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. 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 has typically been to apply 2,4-D @ 1 qt/A to actively growing rosettes in the fall. In fact, just about any broadleaf herbicide commonly applied in the fall in the eastern cornbelt will work well on controlling this weed. However, 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. The best herbicide programs for spring burndowns are 2,4-D + dicamba, atrazine + paraquat + 2,4-D, something with chlorimuron in it, and Elevore + 2,4-D. for more information on spring burndown information, consult the burndown section in the Weed Control Guide for Ohio, Indiana, and Illinois (publication WS-16).

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 K.M. 1964. Poisonous Plants of the United States and Canada. Pentice-Hall, Inc., Englewood Cliffs, N.J. pp 425-435

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

Dicamba Application Dates For 2021 And Alternatives For Control Of Herbicide-Resistant Weeds On Soybean

(Marcelo Zimmer) & *(Bill Johnson)*

Planting season is at full swing and postemergence (POST) herbicide application season will be here soon with the recent rains we have received. For those that planted Xtend or Xtendflex soybeans or use dicamba postemergence in corn or grass pastures, we would like to remind those users of the dicamba application restrictions for Indiana.

On March 2, 2021, the Indiana Pesticide Review Board (IPRB) classified all Restricted Use Pesticides (RUP) containing at least 6.5% dicamba as Highly Volatile Herbicides (HVH). A HVH is any herbicide capable of emitting vapors that can move off-target and cause injury to non-target vegetation. This decision allowed the Office of Indiana State Chemist (OISC) to establish a no-spray application period from June 21st through August 31st for all dicamba HVHs. During the no-spray period, NONE of the dicamba HVHs can be applied, regardless of the target crop or site to which it is applied. Therefore, this decision also affects a few POST corn herbicides that contain dicamba and herbicides used in grass pastures as well. A list of all dicamba RUPs in Indiana that are impacted by this restriction is shown in table 1. For more information regarding dicamba's classification as a HVH, access www.oisc.purdue.edu/pesticide/pdf/hvh_faq.pdf.

There are several states that have additional application restrictions in place for dicamba, above and beyond the June 30th cutoff date on the federal label. So, Indiana is not alone in having restrictions in place to reduce incidences of off-target movement. Since last summer, we have been advising our clientele that weed control plans that do not include the use of dicamba after June 20th should be in place for this season based on the success in reducing the number of off-target movement claims submitted to OISC. The development of herbicide-resistance to dicamba in combination to off-target movement concerns reinforces the importance of using an Integrated Weed Management (IWM) approach that does not solely rely on one active ingredient to control weeds like marestail, giant ragweed, waterhemp, and Palmer amaranth that are resistant to multiple herbicides sites of action. Strategies such as applying multiple effective herbicide modes of action (MOA); full rates of preemergence (PRE) herbicides at planting; layered residuals; cover crops; and inter-row cultivation are some of the alternatives for reducing the reliance on POST emergence herbicides such as dicamba.

DICAMBA RUP REGISTERED IN INDIANA

PRODUCT NAME	REGISTRANT NAME	REG NUMBER
AGRI STAR BY ALBAUGH DICAMBA DMA SALT	ALBAUGH INC	42750-40
AGRISOLUTIONS STERLING BLUE HERBICIDE	WINFIELD SOLUTIONS LLC	42750-209-1381
AGRISOLUTIONS STERLING BLUE HERBICIDE	WINFIELD SOLUTIONS LLC	7969-137-1381
AGSAVER DICAMBA DMA SALT	AGSAVER LLC	83772-11
BANVEL	ARYSTA LIFESCIENCE NORTH AMERICA	66330-276
BANVEL 480 HERBICIDE	ARYSTA LIFESCIENCE NORTH AMERICA	66330-421
CLARIFIER	WINFIELD SOLUTIONS LLC	42750-209-1381
CLARIFIER HERBICIDE	WINFIELD SOLUTIONS LLC	7969-137-1381
CLARITY HERBICIDE	BASF CORPORATION	7969-137
CLASH SELECTIVE HERBICIDE	NUFARM AMERICAS INC	228-615
CRUISE CONTROL	ALLIGARE LLC	42750-40-81927
DETONATE HERBICIDE	TENKOZ INC	7969-137-55467
DETONATE HERBICIDE	TENKOZ INC	42750-209-55467
DIABLO HERBICIDE	NUFARM AMERICAS INC	228-379
DICAMBA 49.8% SL	REDEAGLE INTERNATIONAL LLC	85678-47
DICAMBA 708 G/L SALT	REDEAGLE INTERNATIONAL LLC	85678-46
DICAMBA DIGLYCOLAMINE SALT SL	HY-GREEN LLC	93923-2
DICAMBA DIMETHYLAMINE SALT SL	HY-GREEN LLC	93923-3
DICAMBA HD	ALBAUGH INC	42750-209
DICAMBA MAX 4	WINFIELD SOLUTIONS LLC	83222-14
DICASH DGA-4	SHARDA USA LLC	83529-35
DIFLEXX DUO HERBICIDE	BAYER CROPSCIENCE LP	264-1184
DIFLEXX HERBICIDE	BAYER CROPSCIENCE LP	264-1173
DISHA DMA HERBICIDE	SHARDA USA LLC	83529-110
DISTINCT HERBICIDE	BASF CORPORATION	7969-150
DOLEAC DMA	ATTICUS LLC	91234-148
DOLERITY DGA	ATTICUS LLC	91234-193
DREXEL DE-AMINE HERBICIDE	DREXEL CHEMICAL CO	19713-680
DREXEL DICAMBA DGA HERBICIDE	DREXEL CHEMICAL CO	19713-687
DREXEL DICAMBA HERBICIDE	DREXEL CHEMICAL CO	19713-624
DUPONT BL1 HERBICIDE	E I DUPONT DE NEMOURS AND COMPANY	42750-271-352
DUPONT D1691 HERBICIDE	E I DUPONT DE NEMOURS AND COMPANY	352-914
DUPONT DICAMBA XP HERBICIDE	E I DUPONT DE NEMOURS AND COMPANY	7969-140-352
DUPONT FEXAPAN HERBICIDE PLUS VAPORGRIP TECHNOLOGY	E I DUPONT DE NEMOURS AND COMPANY	352-913
ENGENIA HERBICIDE	BASF CORPORATION	7969-472
HM-1410 HERBICIDE	HELENA CHEMICAL COMPANY	5905-597
M1691 HERBICIDE	MONSANTO COMPANY	524-582
OPTI-DGA HERBICIDE	HELENA CHEMICAL COMPANY	5905-597
ORACLE DICAMBA AGRICULTURAL HERBICIDE	GHARDA CHEMICALS INTERNATIONAL INC	93182-10
OVERDRIVE HERBICIDE	BASF CORPORATION	7969-150
OUTLAW	HELENA CHEMICAL COMPANY	5905-574
QUALI-PRO FAHRENHEIT HERBICIDE	CONTROL SOLUTIONS INC	53883-387
RIFLE HERBICIDE	LOVELAND PRODUCTS INC	34704-861
ROUNDUP XTEND WITH VAPORGRIP TECHNOLOGY	MONSANTO COMPANY	524-616
STATUS HERBICIDE	BASF CORPORATION	7969-242
STERLING BLUE DGA HERBICIDE	WINFIELD SOLUTIONS LLC	228-615-1381
STRUT HERBICIDE	LOVELAND PRODUCTS INC	34704-1043
TAVIUM PLUS VAPORGRIP TECHNOLOGY	SYNGENTA CROP PROTECTION	100-1623
TOPEKA	ROTAM NORTH AMERICA INC	83100-34-83979
T-REX DICAMBA HERBICIDE SUPER CONCENTRATE BROADLEAF WEED KILLER	MEY CORPORATION	87895-5-80967
VERITAS LV	INNVICTIS CROP CARE LLC	7969-137-89391
VISION	HELENA CHEMICAL COMPANY	5905-576
VISION HERBICIDE	HELENA AGRI-ENTERPRISES LLC	5905-576
WC-DCB	FMC CORPORATION	279-9655
XTENDIMAX WITH VAPORGRIP TECHNOLOGY	BAYER CROPSCIENCE LP	264-1210

More Observers Needed To Monitor Precipitation Across Indiana

(Beth Hall)

It seems the weather pattern may have shifted toward wetter conditions. Over the past week, Indiana has received over an inch of rain and the 7-day forecast is predicting at least another inch (Figure 1) in the central and southern parts of the state. The northern counties of Indiana, that have been in the *Abnormally Dry* status (or worse) on the US Drought Monitor, seems to continually miss the bulk or

precipitation. The latest monthly outlook for May was released on April 30th and it is favoring above-normal precipitation for the month (Figure 2). Certainly, the first few weeks of May look wet; will the remainder of the month continue in that pattern? With respect to temperature, the outlooks are slightly favoring below-normal conditions which may help keep whatever rain falls from evaporating too quickly!

Over the past several months, it seems northern Indiana has not received as much precipitation as central and southern Indiana. When we examine maps that average precipitation over longer periods of times, data tends to smooth the more detailed story of individual rainfall events. However, for individual storm events, it is helpful for weather and climate experts and enthusiasts to know more specifically where higher and lower amounts of precipitation fell, even over short distances. While the federal government manages a variety of rain gauge networks, getting rainfall information every few kilometers has been challenging. In 1998, an isolated rainstorm event occurred in the mountains of Colorado that resulted in serious, unpredicted flooding. Because of the lack of observations, the National Weather Service was unable to know how much was falling and where, let alone better calibrate their radar and forecast models due to the lack of data. Thus, formed CoCoRaHS – the Community Collaborative Rain, Hail & Snow Network (www.cocorahs.org). This is a citizen science program that invites volunteers such as yourself to join, provide a standard, manual rain gauge, and take daily observations of rainfall in your area. The impact of this additional data can be striking. For example, Figure 3 illustrates a rainfall total map from an event in early January 2020 that compares data from federal observation sites compared to one that includes data from CoCoRaHS volunteers. Note the increased level of detail that the CoCoRaHS observations provide! If you're interested in learning more about CoCoRaHS and perhaps signing up to be a volunteer, please go to www.cocorahs.org or email me at bethhall@purdue.edu.

Modified growing degree day accumulations are near average across the state, where accumulations are slightly ahead of average in the northern part of the state and slightly below average in the southern part of the state (Figures 4 and 5). Climate outlooks over the next 7-10 days are favoring below-normal temperatures, so MGDDs are not anticipated to increase at a fast rate any time soon.

Figure 1. Forecasted precipitation amounts for May 5-12, 2021.

Figure 2. Probabilistic precipitation outlook for May 2021. Predictions are favoring above-normal precipitation for the Indiana region. Source: Climate Prediction Center.

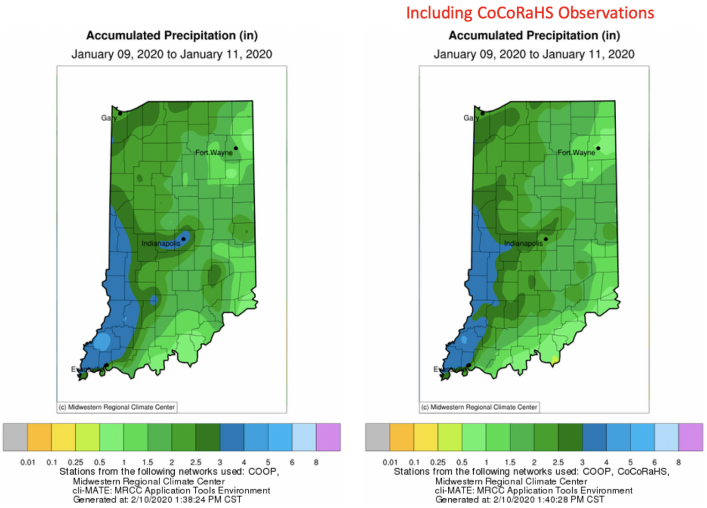


Figure 3. Comparison of maps showing interpolated precipitation observations when considering data from only the National Weather Service's Cooperative Network (COOP; left map) to the one that includes both COOP and CoCoRaHS data (right).

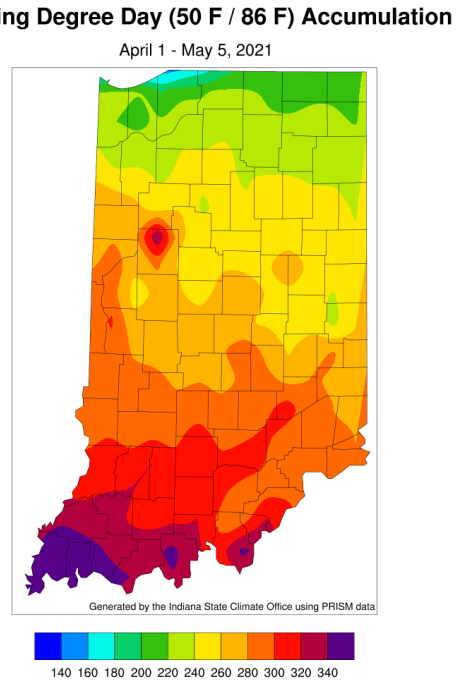
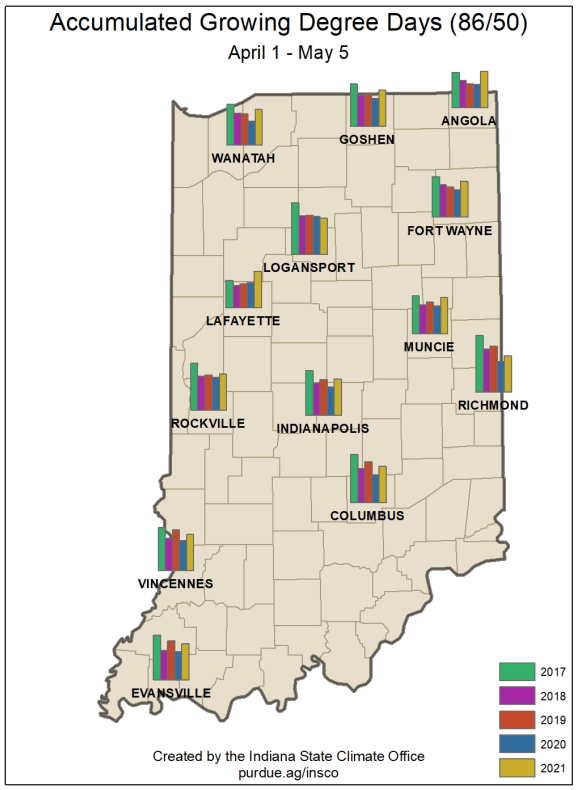


Figure 4. Modified growing degree day accumulation from April 1 to May 5, 2021.

Figure 5. Comparison of 2021 modified growing degree day accumulations from average for April 1 – May 5 to the past four years.



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