PURDUE UNIVERSITY | Extension - Entomology

Pest&Crop newsletter

Issue: 2021.5
April 30, 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

Moth Trap Captures “Springing” Up, Currently Other “Worms” Being Found

(John Obermeyer) & *(Christian Krupke)*

It seems that the freezing temperatures, and snow, of just over a week ago has spurred an increase in the black cutworm and armyworm moth activity, see the accompanying pheromone trap captures. The dramatic swings in temperatures we have had are an annoyance to us, but to an insect dependent on heat accumulations for development, it may be the difference between minor damage to a wide-spread outbreak. In other words, egg-laying and hatching of these pests may have occurred, but it will be a couple of weeks before we know they full extent of this year’s threat to our row and small grain crops. This is why we monitor for moth arrival, and intensity of captures, coupled with temperatures to track their development. We are so fortunate in Indiana to have so many faithful trapping cooperators!

It isn’t uncommon to receive reports of insect damage in advance of heat unit-development models. Those models are based on temperature readings from relatively few monitoring stations, so they cannot reliably predict each and every environment. Many cutworm species look alike and identification is often confusing. Proper identification of one species, the black cutworm, is critical because it can be an economic threat to corn, whereas many other species are not. We already know that the black cutworm will cut or burrow into plants that can ultimately kill corn and cause stand losses. The black cutworm is our most commonly destructive species, but some fields, especially those with weeds or cover crops, will have a mixed bag of “other” cutworms; dingy, claybacked, and variegated among them.

The dingy cutworm, probably the second most common species, is primarily a leaf feeder and will rarely cut plants, and if it does, the cutting is above the ground. Because the corn plant up to 5-leaves can withstand severe defoliation without a yield loss (compare it to frost damage), treatment for the dingy cutworm is rarely justified. To confuse the issue, there are many other species that one may find while scouting. For example, the claybacked cutworm is not as common as the black and dingy, and its damage is a mix of leaf feeding and plant cutting. The dingy and claybacked cutworms overwinter as partially grown larvae, therefore finding cutworms 3/4 of an inch or more at this time would likely point to these species.

Moth captures, tracking temperatures, and subsequent field scouting in high-risk crops have been a successful pest management combination for decades for these species. Happy scouting!

While checking emerging soybeans on April 19 in west central Indiana, these cutworms and their damage were found. (*Photo Credit: John Obermeyer*)

Close inspection reveals that the smooth skin and near-equal size tubercles (black dots) indicate that it is likely a dingy (overwintering) cutworm. (*Photo Credit: John Obermeyer*)

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							
Jennings/SEPAC Ag Center	0	1	0	7							
Knox/SWPAC Ag Center	0	6	1	10							
LaPorte/Pinney Ag Center	27	50	12	393							
Lawrence/Feldun Ag Center	14	62	7	434							
Randolph/Davis Ag Center	0	0	0	0							
Tippecanoe/Meigs	1	0	0	16							
Whitley/NEPAC Ag Center	0	0	0	18							

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

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

Field Crop Disease Monitoring Resources For Indiana

(Darcy Telenko)

I want to remind you of a few resources for monitoring field crop diseases here in Indiana as planting has begun to ramp up here in Indiana. Our team will be tracking diseases across Indiana and will add updates here in Pest & Crop and on the Purdue Field Crop Pathology Extension site. You can also follow me on Twitter @DTelenko

There are national field crop pathology programs in place to track and/or predict risk for some the more economically important diseases in the Unites States, such as Fusarium head blight in wheat; wheat stripe rust; southern rust of corn and tar spot; and soybean rust. The Crop Protection Network site hosts unbiased, collaborative outputs on important issues affecting field crops in the United States and Canada; this site has numerous resources and fungicide efficacy tables for corn, soybean, and wheat.

General resources for all field crops:

Purdue Field Crop Pathology Extension site: https://extension.purdue.edu/fieldcroppathology/

Crop Protection Network: https://cropprotectionnetwork.org/

Applied Research in Field Crop Pathology for Indiana – 2020 https://mdc.itap.purdue.edu/item.asp?Item_Number=BP-216-W

Applied Research in Field Crop Pathology for Indiana – 2019 https://mdc.itap.purdue.edu/item.asp?Item_Number=BP-205-W

Wheat:

Fusarium head blight risk map: http://www.wheatscab.psu.edu/

National wheat stripe rust tracking: https://wheat.agpestmonitor.org/stripe-rust/

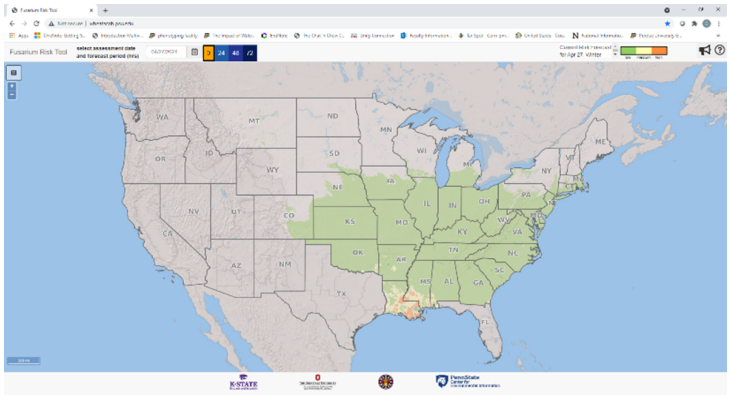


Figure 1. Maps of Fusarium head blight risk.

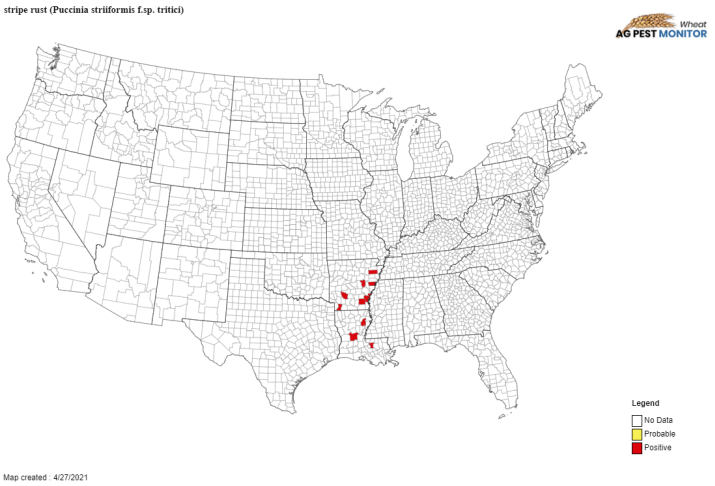


Figure 2. Wheat strip rust tracking.

Corn:

National corn rust and tar spot tracking: https://corn.ipmpipe.org/

A new series on tar spot of corn: doi.org/10.31274/cpn-20201214-2

Soybean:

National soybean rust tracking: https://soybean.ipmpipe.org/

Soft Red Winter Wheat As A Forage

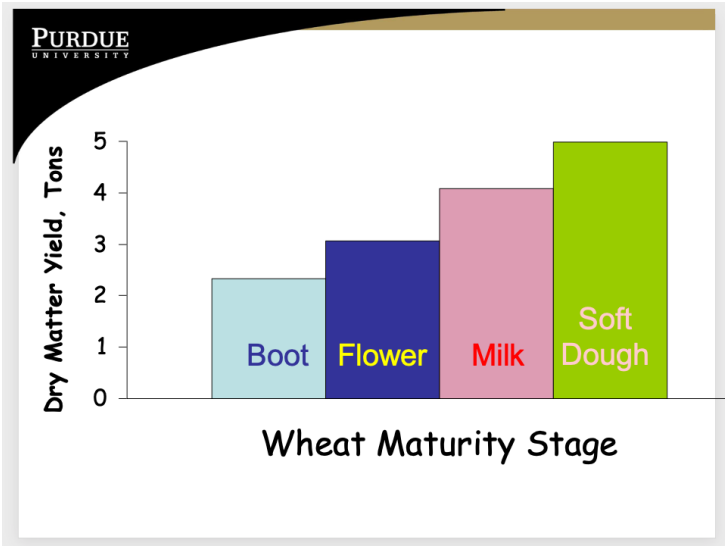
(Keith Johnson)

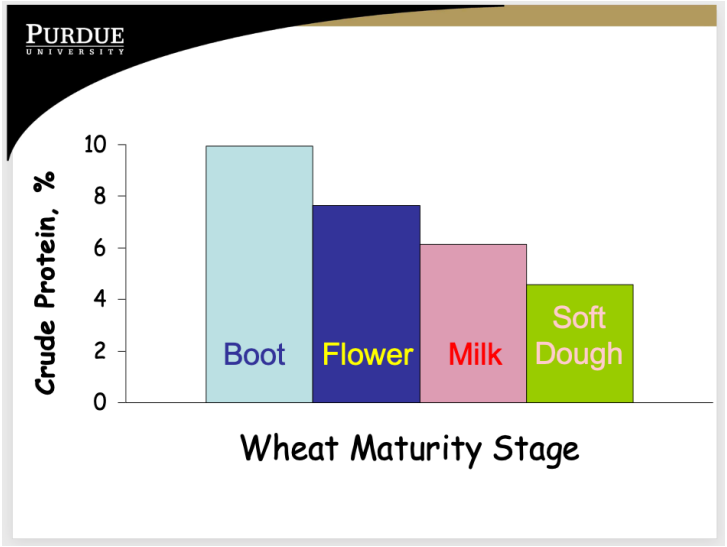
Many ruminant livestock producers have used soft red winter wheat as a forage resource, but many more livestock and row crop producers might want to consider this option, too. Other small grains to consider include winter rye and winter triticale. Timely seeding of small grains in October and harvest in May permits a viable double crop system with corn and soybeans. With increasing interest in using cover crops following corn and soybean harvest, some of the attributes of using cover crops can be accomplished when small grains are used as a dual purpose cover crop and forage.

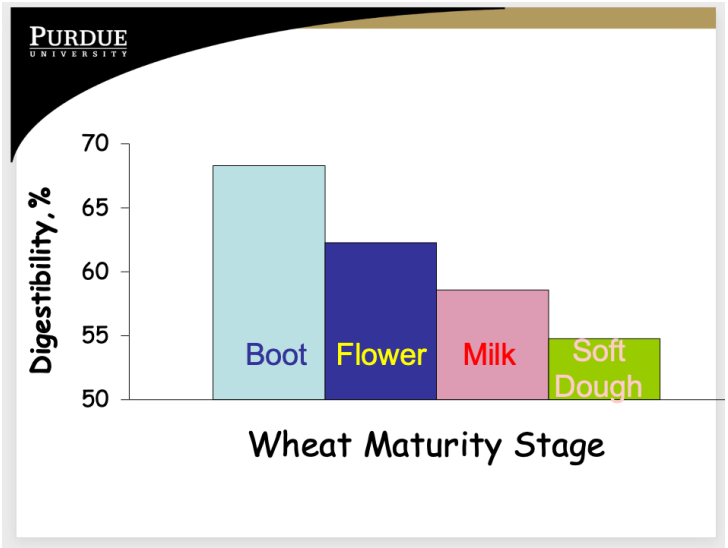
Soft red winter wheat can be a viable double crop forage option. (Photo Credit: Keith Johnson)

An important consideration is understanding that small grain forage yield increases and forage quality declines as the crop progresses from the boot stage (when the seed head is in the last leaf sheath) to the soft dough stage. The following figures from Purdue University research illustrate this relationship. An important point is that in this research 90 pounds of nitrogen per acre was applied to help boost yield. Many producers may not apply nitrogen fertilizer if one of the objectives is to capture nutrients from the previous crop. Applying no nitrogen would likely reduce forage yield, and possibly crude protein concentration, too.

Some years getting the small grain to dry to a safe baling moisture for dry hay can be difficult. Fortunately, these crops can be successfully harvested as baleage and traditional chopped silage if harvest and storage best management practices are followed.







Cover Crop Termination Timing To Help Manage Soil Moisture

(Lyndon Kelley)

Timing of cover crop termination can have significant benefits in wet and dry springs.

Early termination helps preserve seedbed soil moisture. If dry conditions are expected, then saving seed-zone moisture is critical. Once killed, the cover crop mulch should reduce evaporation from the soil surface. (Photo by Tony Vyn, Purdue University)

Timing of cover crop termination is one of the few management decisions that can be a benefit in either a wet or dry spring. An aggressive cover crop like cereal rye will use 0.8 inches of water per week in early April and increase to 1.2 inches of water per week by early May.

In the wet season, allowing the cover crop to grow to almost planting time can help dry fields and make them easier to work between rainfalls. In a dry spring, terminating the cover crop after a limited amount of growth stops the water use, yet leaves a dead cover to reduce water evaporation from the soil surface. Termination with herbicide rather than tillage maximizes the amount of water left in the soil.

Tony Vyn, professor of cropping systems in the Department of Agronomy at Purdue University, commented at a recent crop update meeting, “Early termination helps preserve seedbed soil moisture. If dry conditions are expected, then saving seed-zone moisture is critical. Once killed, the cover crop mulch should reduce evaporation from the soil surface. How much transpiration loss there is from a cover crop depends on its current biomass and the air temperatures going forward. The biggest risk is with fall rye that has a thick stand.”

The other advantage from early kill of a cereal cover crop before corn (e.g., 10 days to two weeks ahead of planting) is that there is less chance of negative allelopathic effects to early corn growth and a faster

release of the nitrogen captured by the cover for the corn that follows.

Top irrigated crop producers manage cover crop growth closely. Even in fields where producers have irrigation available, early termination of the cover crop has an economic and water savings advantage. In a normal year, May rainfall is sufficient to replace the soil moisture used by the cover crop. However, in a dry spring, between the cover crop and tillage, irrigators may need to do 2 or 3 inches of additional irrigation applications to replace the water removed. At an average cost of $3.50 per acre-inch, the savings is over $10 in energy cost alone, not to mention the increase labor at a critical time of the year.

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Water Up And Irrigate In

(Lyndon Kelley)

Over the wide variety of planting and soil-applied herbicide situations, most irrigated producers will gain from an early-season irrigation application. The limiting factor is whether the irrigation system is ready to go.

Field irrigation system

Aggressive cover crop growth and sometimes lack of timely spring rain may leave fields lacking moisture for optimum planting or seedling germination. Achieving the maximum uniform germination and emergence can often be improved through proper early season water management. Irrigating fields prior to or just after planting can keep the planter moving and still meet the “plant into moisture” requirement if rainfall is lacking in your area.

Late spring tillage and the delays in killing cover crops are two reasons we see drier than normal planting conditions in some fields. Late spring planting of some seed and vegetable crops may result in a greater need for early season irrigation for developing crops as we enter the typical drier weather of summer.

Irrigation water applied at 0.5 to 0.75 inches will moisten dry soil down to 6 inches to replace water lost to tillage or a cover crop. An inch of irrigation will often be needed in a field that has not received rainfall since the cover crop was destroyed. Heavier soil will take a slightly larger application to wet soil down to the 6-inch level. Monitoring newly emerged crops that were “irrigated up” is essential. It is important to water enough to keep roots growing down into the moisture. In most years, rainfall is plentiful enough to replenish water lost to tillage or a cover crop, but a dry layer 6 to 8 inches deep can greatly hinder crop development and needs to be replenished by rain or irrigation.

Some producers fear irrigation water may contribute to **imbibitional chilling injury**, a condition that may happen when seeds are exposed to cold soil and water temperatures during the initial 24 hours for soybeans to 36 hours for corn as seedlings begin the germination process when the seeds imbibe water and potentially rupture during the swelling process.

Most agronomists believe that soil temperatures at seed depth below 50 degrees Fahrenheit may result in imbibitional chilling injur**y**. Since most irrigation water is within a few degrees of 50 F, consider soil temperature and weather forecasts before making irrigation applications at germination. Soil temperature in the mid-50s or higher should temper a 0.5-inch irrigation application, resulting in minimal risk. For more information about cold injury and seedling germination, see “Cold Soils & Risk of Imbibitional Chilling Injury in Corn” by R.L. (Bob) Nielsen, Purdue University.

Early season irrigation can be the cause and solution to soil crusting and emergence problems. Depending on soil type, crop residue and irrigation application equipment, early season irrigation can create some soil crusting, which can be accelerated by rapid surface drying. Small applications of water 0.2 to 0.3 inches may help to allow emergence of seed through the crust.

Planting after harvested forage like wheat hay or cereal rye silage has the double crop advantage, but rainfall or irrigation is required to replace the depleted soil moisture. Newly emerged corn and soybeans use less than 0.5 inches of water per week, but many annuals like wheat and rye will dry the soil to a depth of 2 to 3 feet, leaving the crop dependent on timely rain or irrigation. Unless the forecast promises a significant chance of rain, 1 to 1.5 inches of irrigation is needed to create the moist soil crops need to successfully develop.

Many herbicide options can be assisted by a timely rain or irrigation. Applications of 0.3 to 0.5 inches of water will move activated soil-applied herbicides if rainfall does not occur within two days after herbicide application. Many soil-applied herbicide labels contain information on improving effectiveness by timely rains or irrigation.

Irrigating to activate herbicides can also create the problem of different levels of weed control between the dry corners and the irrigated portion of the field. Timely and directed scouting for weeds in dry corners will be needed later in the season.

Early season irrigation can be more accurately scheduled for monitoring soil moisture in the root zone rather than using a checkbook irrigation scheduling system for newly emerged crops. Later in the season, checkbook irrigation scheduling will show its advantages over scheduling by soil moisture in the root zone alone. To learn more about checkbook irrigation scheduling, see the Soil Water Balance Sheet or Irrigation Scheduling Tools by Purdue University Extension and Michigan State University Extension.

Delayed planting and slow root growth may increase the need for monitoring soil moisture and early season irrigation. Soil probing below the developing root is a good indication of the need for early season irrigation. Soil below the roots should still be able to form and hold a ball when squeezed if adequate moisture is present. The USDA offers an easy-to-use guide on hand-feel method of soil moisture monitoring.

For more information on irrigating, contact me at 269-535-0343.

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From Snowfall To Heat Waves To Heavy Rainfall

(Beth Hall)

Last week, the topic around Indiana was the snow event in April. This week started off with above normal temperatures followed by significant rainfall. This is what spring is like in the mid-latitudes. I have lived in Nevada, Illinois, Indiana, Ohio, New Hampshire, and Maryland. In all six of these states, the locals have enjoyed telling us something along the line of "if you don't like the weather here in [fill in current location], just wait a few minutes". They then like to go on by saying that's how springtime is in [fill in current location]. Samuel Clemens (a.k.a. Mark Twain) is often credited with starting this now common expression. My personal experience is that the expression is not unique to any one state or town. If one lives in the middle latitudes of the U.S. (*i.e.,* not Alaska, Hawaii, or those far southern states), then springtime is often a time of wide temperature swings and weather phenomena. It is nature's way of transitioning between winter and summer and hitting some bumps along the way. Enjoy the ride. Wouldn't it get boring to have sunny, warm, overly-consistent days every day of the year?

These weather swings keep climatologists and forecasters on our toes and at risk of looking wrong too often! With respect to accumulated growing degree days, things were progressing well and then quickly slowed down last week. In fact, southern Indiana was slightly behind average in their accumulations. However, the warm temperatures may have allowed those accumulations to catch up to normal (Figures 1 and 2). With warm temperatures comes increased evapotranspiration rates. If Indiana doesn't see significant rainfall over the next several weeks, the topic of drought may become more than just small-talk fodder in the check-out lane. Climate outlooks from the federal Climate Prediction Center have been eluding to increased probabilities of above-normal precipitation since the end of the calendar year. However, the data shows that it never really happened. In fact, much of northern Indiana needs 3-6 inches of precipitation (or more!) to return conditions to normal (Figure 3). Combine that estimate with the increased rate of evapotranspiration and lower precipitation amounts over the past several weeks and there is suddenly concern starting to develop over whether our water supplies can be sustained. Even the recent rain this week, while around two inches in some places, may not be enough to replenish those deficits across the state. But, it's a start!

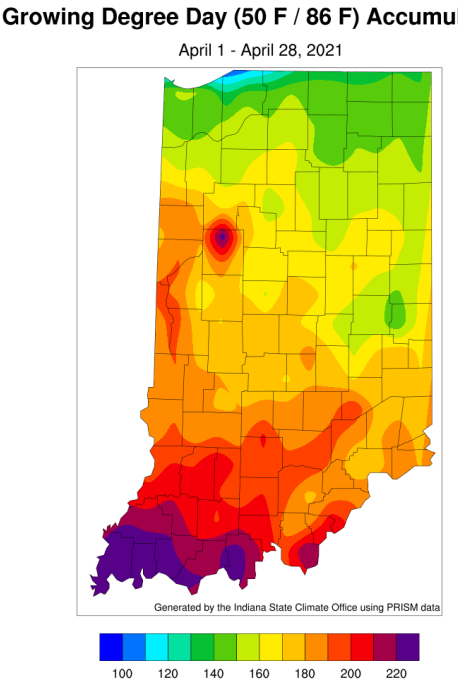

Figure 1. Modified growing degree day accumulation from April 1-28,2021.

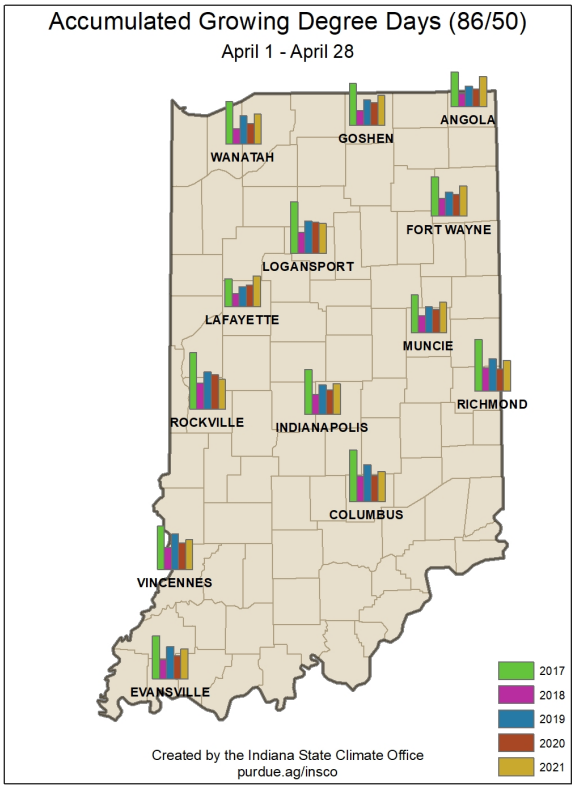

Figure 2. Comparison of 2021 modified growing degree day accumulations from average for April 1-21 to the past four years.

Figure 3. Estimated amount of additional precipitation needed, by climate zones, for the period ending April 24, 2021.

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