Issue: 2024:11
June 7, 2024

Pest & Crop Newsletter

Purdue Cooperative Extension Service
and USDA-NIFA Extension IPM Grant

PURDUE UNIVERSITY | Extension - Entomology

This work is supported in part by Extension Implementation Grant 2021-70006-35390 / IND90001518G-1027053 from the USDA National Institute of Food and Agriculture and NCR SARE Award GNC20-311

In This Issue

Armyworm Pheromone Trap Report – 2024

(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	8	41	101	81	18	5	32	37	32	
Jennings/SEPAC Ag Center	1	8	58	137	60	18	4	6	1	3	
Knox/SWPAC Ag Center	0	0	41	31	13	8	11	9	2	16	
LaPorte/Pinney Ag Center	0	44	51	65	33	14	35	9			
Lawrence/Feldun Ag Center	4	12	52	48	103	69	86	46	49	82	159
Randolph/DPAC Ag Center	0	0	25	90	84	0	0	10		0	
Tippecanoe/ACRE	0	4	37	27	68	30	8	3	2	15	
Whitley/NEPAC Ag Center	0	0	62	179	381	507	76	139	32	55	

Wk 1 = 4/1-4/3/24; Wk 2 = 4/4-4/10/24; Wk 3 = 4/11-4/17/24; Wk 4 = 4/18-4/24/24; Wk 5 = 4/25-5/1/24; Wk 6 = 5/2-5/8/24; Wk 7 = 5/9-5/15/24; Wk 8 = 5/16-5/22/24; Wk 9 = 5/23-5/29/24; Wk 10 = 5/30-6/5/24; Wk 11 = 6/6-6/12/24

Armyworm Control Variable, Considerations For A Later Outbreak

(Christian Krupke) & *(John Obermeyer)*

Earlier this week, we received reports of armyworm in northern counties continuing to damage wheat. Unfortunately, by the time it was realized, many of the larvae were large and near the pupal stage. Treatment success, with larvae greater than 1.25” is variable. Producers spraying wheat in northeastern counties found this out recently, as last-ditch attempts were made to protect the flag leaves and heads from these ravenous, large caterpillars. The armyworm kept marching on.

How long will armyworm feed? The answer depends on how mature the larvae are in your area. A look back at the literature reveals that in 1914 Indiana experienced a significant armyworm outbreak. Dr. John J. Davis, known to us as the father of Purdue entomology, was inspired to conduct some simple yet valuable life development information on the armyworm that year. The chart below summarizes the approximate number of days for each of the life stages of the armyworm and body measurements:

Stage	Approximate Days	Approximate Body Length (mm)	Approximate Head Capsule Width (mm)
Egg	6	-	-
Larva:			
First instar	4	2-4	0.4
Second instar	3.5	3-6	0.6
Third instar	3	5-10	1.0
Fourth instar	3	11-15 (about .5 inch)	1.5
Fifth instar	3.5	14-21	2.4
Sixth instar	8	24-35 (about 1 to 1.5 inch)	3.4
Total larval stage	25		
Pupa	21	-	-

Although the information is over a century old, it’s just as applicable as ever. The question is: are the large armyworms almost finished feeding? When armyworms reach a length of about 1-1/2 inches they still have about 8 days to feed before pupating. During this time period they can consume a tremendous amount of foliage. If they consume their host, they can be seen “marching” from that field to another. Dr. Davis said, “The remarkable voracity of the armyworm

during its last larval instar explains its sudden appearance in such enormous and destructive numbers when it is nearly full grown. The amount of foliage eaten in this (sixth) instar was nearly seven times as much as in the fifth instar, and more than 80 percent of all of the foliage eaten during the entire larval period." In other words, this is when we are most likely to "see" them, as their damage becomes visible even from a distance.

Protect the flag leaf and head from armyworm feeding. (Photo Credit: John Obermeyer)

When is it best to control armyworms? Obviously from the above, one needs to prevent the armyworm from getting over an inch in length. It has been stated by many of you who have been on the "front line" that the big worms are harder to kill than the small ones; the same message we hear for weed control. One might consider treating in the evening, closer to the time when the armyworm leaves their day-time hiding place and climb up plants to feed during the night.

Armyworm are difficult to control when large and they make lousy pets. (Photo Credit: John Obermeyer)

There are a range of products available, with a variety of pyrethroids being a cheap and common option. However, improved control can be achieved with products containing chlorantraniliprole, and this comes with a price premium.

There is not one right answer on "which product to choose". It all depends on how much a producer is willing to spend to attempt to salvage what's left of the crop.

Mid July armyworm damage to a late-planted and weedy corn field. (Photo Credit: John Obermeyer)

In any event, we are almost done with the larval armyworm story for spring of 2024. Will the armyworm be back later this summer? Moths, from these first-generation larvae, are already flying again (see "Armyworm Pheromone Trap Report," and notice the uptick of moths in southern Indiana traps). Female moths, laden with eggs, are attracted to lush, dense grasses for deposition. This could be well managed forage grasses or something as small as a patch of ornamental grass in a yard. A handful of times over the years, we have been sent pictures of "back 40" cornfields, planted very late that were completely denuded in late June. A surprise to the neglectful producer! Because of the high moth numbers this spring, the possibility of uncharacteristic, late-season damage from armyworm exists this season. The good news is that armyworm larvae are very susceptible to fungal pathogens and can be wiped out by these plagues when they reach high densities. In short, Mother Nature will probably take care of this pest for the rest of the year. Happy Scouting!

So Lush, So Green, and Oh So Poisonous

(Keith Johnson)

You better not feed yew to the ewe (and other livestock)

In memory of livestock that met "Their Maker" because they ate yew.

It's that time of year when the yew (pronounced like the letter "U") is likely in need of a trim to look best as a landscaping plant. Yews have been used as a common

landscaping shrub or small tree for decades. They have closely spaced, glossy, rather tough, dark green, linear pointed-end leaves that are 1.5 – 2 inches long. Hard-to-see male and female flowers are found on separate plants and form fleshy red to yellow fruits that contain a single seed.

Many plants have poisonous compounds that can cause all kinds of concerns, and even death, if consumed. The interactions that I have had with veterinarians, suggest that the yew is right at or near the top of plants that cause livestock death. A disheartening scenario is when yew trimmings are thrown over the fence by the livestock owner or neighbor thinking that the trimmings would make a great snack for the livestock. Fresh or dry trimmings, it doesn't matter. The result will be the same – death.

The following information about yew is from the Purdue University toxic plant exhibit website Toxic Plants (purdue.edu). The live plant exhibit is located at the Southern Indiana Purdue Agricultural Center and next to the Heeke Animal Disease Diagnostic Laboratory. Information about 21 different plants that are known to be potentially poisonous are found at the live plant exhibit and at the website.

Time of Most Concern:

- When clippings are placed in pastures, when livestock get out of pasture and find yews in landscapes, or when the older leaves are consumed
- All seasons of the year

Compound that Causes Concern:

- Perhaps an alkaloid; taxine
- Separated into two fractions, taxine A and taxine B. – Taxine B is present in the greatest amount
- Alkaloid does not act as a cardiac glycoside but depresses conduction of depolarization through the heart
- Taxine and other diterpenoid alkaloids contain a slow-to-act gastrointestinal irritating oil

Part of Plant Most Toxic:

- Older leaves
- Seed if chewed

Amount Needed to be Consumed for Clinical Signs / Death:

- Green foliage is readily consumed and fatal at:
  - Monogastrics – 0.1% of an animal's body weight
    - 1 lb plant material in a 1,000 lb horse
  - Ruminants – 0.5% of the animal's body weight
    - 5 lbs plant material in a 1,000 lb cow

Inform friends and neighbors about the danger of yew. Don't feed the trimmings to livestock!

A yew bush used as landscaping is in need of a trim. Don't feed the trimmings to livestock or death will occur. Photo provided by Keith Johnson.

Fusarium Head Blight (Scab) Of Wheat: Things To Consider When Harvesting

(Darcy Telenko)

Wheat harvest will soon be upon us in Indiana. Fusarium head blight (FHB) or scab is one of the most important diseases of wheat and most challenging to prevent. In addition, FHB infection can cause the production of a mycotoxin called deoxynivalenol (DON or vomitoxin). The environmental conditions have been extremely conducive to FHB development this year in areas. Our research sites in both West Lafayette and Vincennes have moderate to high levels of FHB develop in our non-treated susceptible variety checks.

Fusarium head blight management is difficult and requires an integrated approach. This includes selection of varieties with moderate resistance and timely fungicide application at flowering. We are now past implementing either of these management options, but these are important to remember for next year. In addition, it will be important to assess your fields this season to determine if you have FHB. FHB can cause direct yield loss creating seeds that are shriveled and have a rough, sunken appearance to complete head loss. FHB infection can also reduce seed quality and feeding value of the grain due to the risk of mycotoxin (DON/vomitoxin)

production in infected seed.

The question now is *"I have scab in my field what do I need do?"* Here's a short list.

Document the issues in each field, so you have records for making decisions on future disease management. FHB is easy to see when the head is still green – it will be much more difficult to rate as the heads reach maturity. See images of FHB in the head both at green and more mature stages. You might be able to see the pink salmon sporulation and/or purple-black fruiting bodies on mature heads (Figures 1 and 2). In addition, it is good to note during the season what management tools were attempted – spray date and growth stage of crop, was there variability in the growth stages, weather conditions after fungicide applications. These all can play a role in effective disease management.

Figure 1. Wheat spikes showing bleached florets affected by scab. Salmon to pink sporulation may be visible and can help confirm once the spikes have reached maturity (pink arrows). Dark purplish-black sooty mold can also occur mature wheat heads following infection (black arrows).

Figure 2. Another example of the salmon/pink sporulation on a wheat head.

5. It is not recommended to store grain from field with high levels of scab – accumulation of DON and other mycotoxins can continue in stored grain. Suspect grain, if stored, should be dried to less than 15% moisture as soon as possible after harvest, then dry down to less than 13% in storage and kept separate from the good quality grain.
6. Planting seed from fields that had moderate to heavy scab is not advisable. The infected seed will have low germination and poor vigor resulting in a thin stand. If going to use this seed, it should be cleaned thoroughly to remove the scabby seeds, and a fungicide seed treatment would be advised to protect germination and reduce seedling blight.

The next question "*Why was is it so bad? I followed the guidelines applied my fungicide at flowering but we still have poor control*."

Here's a few of my observations:

1. Moderately to highly favorable environmental conditions for Fusarium head blight (FHB)/scab occurred all spring.
2. Many wheat varieties have moderate resistance that help can reduce the risk of sever disease, and fungicides can help suppress the development, but this may only provide about 50% suppression. Therefore, even with the best management programs in place the extremely favorable conditions for FHB have led to high levels of infection this season.
3. There was extremely variable growth in individual fields this year – plants ranged from boot to full flower when trying to make a decision on fungicide timing. In addition, fungicides may only provide partial suppression of FHB and timing is a significant issue

for obtaining moderate levels of control.

4. Frequent rains not only complicated planting, but any and every other trip across the field. Rain events closely following fungicide application may have diluted or washed off applications further reducing expected efficacy.

Additional references:

US Wheat and Barley Scab Initiative https://scabusa.org/

Cowger, C., and Arellano, C. 2013. Fusarium graminearum infection and deoxynivalenol concentrations during development of wheat spikes. Phytopathology 103:460-471. https://apsjournals.apsnet.org/doi/pdf/10.1094/PHYTO-03-12-0054-R

Salgado, J. D., Wallhead, M., Madden, L. V., and Paul, P. A. 2011. Grain harvesting strategies to minimize grain quality losses due to Fusarium head blight in wheat. Plant Dis. 95:1448-1457. https://apsjournals.apsnet.org/doi/abs/10.1094/PDIS-04-11-0309

Fungicide efficacy for control of wheat diseases. CPN-3002. http://doi.org/10.31274/cpn-20190620-031

An Overview of Fusarium Head Blight. CPN-3005. http://doi.org/10.31274/cpn-20211109-0

Help Us Collect Fusarium Head Blight Wheat Samples In Indiana

(Darcy Telenko)

The USWBSI is supporting a national research project to conduct fungicide sensitivity test of Fusarium from wheat and barley and we are looking for samples from grower fields in Indiana.

If you have a wheat field that we can sample or if you are willing to collect samples for us, please let me know.

Please send me an email at dtelenko@purdue.edu and I will get you the information or send a team member out to sample.

Figure 2. Another example of the salmon/pink sporulation on a wheat head.

Harvest Aid Herbicide Treatments for Wheat

(Bill Johnson), *(Marcelo Zimmer)* & *(Tommy Butts)*

Photo credit – University of Nebraska (https://cropwatch.unl.edu/2019/post-harvest-weed-control-winter-wheat)

Pre-harvest herbicide applications may be needed in wheat fields that have a lot of weed growth due to the recent wet weather patterns. These herbicide applications address several issues such as harvest difficulties, dockage problems, weed seed production, and soil water depletion. Although it may not be possible to recover lost yield potential due to weed interference, a pre-harvest treatment can go a long way toward reducing weed problems in future years by preventing the production and spread of weed seed.

Herbicides labeled for use as harvest aids in wheat are listed in Table 1. There are differences in how quickly they act to control target weeds, the interval requirement between application and grain harvest, and the level or length of control achieved. All of these herbicide treatments will

require thorough spray coverage to be most effective and can be used once wheat reaches the hard dough stage, which is usually defined as 30% grain moisture or lower. If saving wheat grain for seed, be sure to check the germination of the treated seed before using next season.

Consult the Ohio, Indiana, Illinois, and Missouri Weed Control Guide (WS-16) or the herbicide label for more details on herbicide use and weeds controlled.

Table 1. Selected herbicides labeled for use as harvest aid treatments in winter wheat.

Product and Rate	Weeds Controlled	Application Timing	Pre Harvest Interval	Comments
Clarity (8 oz/A)	Broadleaf	Hard dough	7 days	Do not use treated wheat for seed unless a germination test results in 95% or higher germination.
2,4-D (1 pt of 4 lb gal or 2/3 pt of 6 lb gal)	Broadleaf	Hard dough	14 days	Weak on kochia and wild buckwheat.
Glyphosate (1 qt of 3 lb ae/gal or 22 oz of Pmax)	Grass and broadleaf	Hard dough	7 days	Consult label for recommended adjuvants. Use of AMS is recommended. Not recommend for wheat being saved for seed.
Sharpen (1-2 oz A)	Pigweeds (waterhemp) if not PPO-resistant and wild buckwheat	Hard dough	3 days	Use with glyphosate. Apply with MSO and AMS.

Weather Related Weed Management Items

(Bill Johnson), *(Marcelo Zimmer)* & *(Tommy Butts)*

Recent wet, rainy weather has created some weed management challenges for Indiana growers. In this article we will hit on a few key points to consider based on current challenges.

Delayed weed control in corn. Indiana corn growers rely heavily on premixes in corn that contain some combination of group 15 herbicides (metolachlor, acetochlor, pyroxasulfone), atrazine, mesotrione (Callisto), clopyralid (Stinger), and bicyclopyrone. Rain will not have completely washed all of the herbicide away, but may have compromised overall activity. Scout fields as soon as possible to determine if weeds are escaping. Obviously giant ragweed is a big concern, but wet conditions and dilution of atrazine can result in failures to control velvetleaf, burcucumber, morningglories, waterhemp, cocklebur and others. If corn is less than 12 inches tall and you haven't used all of the atrazine allowed by the label, it would be wise to add atrazine to the other postemergence herbicides being applied to corn to control the above mentioned weeds and provide some soil residual activity. If corn is more than 12 inches tall, you cannot use any additional atrazine.

Weed escapes in large corn in all of Indiana. Warm weather is helping corn grow rapidly. Postemergence corn herbicide options become limited when corn is 12 inches tall, and really limited on corn at the V6 or later growth stage. Also keep in mind that large weeds are much more difficult to control. To avoid crop injury on corn under other stresses, try to keep spray out of whorls, especially with HPPD (group 27) inhibitors and contact products. See table 8 on page 79 in the weed control guide for the height and growth stage restrictions of postemergence corn herbicides.

Big Bad Broadleaves in Corn. Be on the lookout for giant ragweed, burcucumber, and waterhemp. Every year is a good one for giant ragweed, and frequent rains are good for burcucumber and waterhemp. Both weeds have relative long emergence patterns and herbicides with both foliar and residual activity are needed. If corn is not 12 inches tall, consider adding some atrazine to the postemergence product to extend the residual window of activity on these weeds. If corn is larger than 12 inches, add a group 27 (mesotrione, tembotrione, topramezone) for foliar and residual activity on burcucumber and waterhemp. A dicamba product can be used for foliar activity on these weeds. If residual activity on waterhemp is needed, add a group 15 herbicide.

Welcome meteorological summer!

(Austin Pearson)

Happy meteorological summer, everyone! Whether you're ready or not, summer is here…well, at least meteorologically. While the official start of summer according to the astronomical calendar is the summer solstice on Thursday, June 20, meteorological summer began on June 1. This distinction is important because meteorological seasons are based on annual temperature cycles and divide the year into four equal parts, allowing climatologists to compare data over consistent time periods each year. Meteorological summer includes the months of June, July, and August.

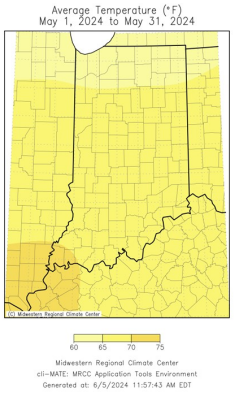
May concluded with a preliminary average temperature of 66.5°F for Indiana, which is 4°F above the normal average. Statewide, average temperatures ranged from 2°F to over 6°F above normal (Figure 1). SHOALS 8S, located in Martin County, recorded the highest deviation, averaging 6.5°F above normal with an average temperature of 71.7°F, making it the warmest location in the state by 0.8°F. PATOKA LAKE in Dubois County recorded the highest maximum temperature for May in the state on May 20, with a high of 94°F (only considered stations with 100% data reporting).

Indiana's preliminary precipitation total for May was nearly normal, averaging 4.92 inches statewide, just 0.14 inches above normal. Precipitation varied widely, with areas

receiving between 75 percent and over 125 percent of normal totals (Figure 2). NEWBURGH 1.3 ENE in Warrick County recorded the highest precipitation in May, measuring 9.12 inches. DE MOTTE 0.8 NNW in Jasper County, measured 4.44 inches on May 21, the second highest daily total for that station since 2008 (only considered stations with 100% data reporting).

Since the beginning of June (June 1-4), temperatures have been around normal, while precipitation has been below normal for most of north-central Indiana. These recent conditions have allowed producers to catch up on field activities. As of June 2, the USDA NASS Crop Weather Report indicated that 87 percent of corn and 81 percent of soybeans have been planted, both of which are above their respective 5-year averages. Due to the above-normal temperatures, growing degree days (GDDs) have continued to track above normal since April 1 (Figure 3). GDD accumulations ranged from 300 to over 650 units across the state, which was 40 to 150 GDDs ahead of schedule.

Looking ahead, temperatures are expected to be pleasant over the coming days, ranging from the 70s to 80s, with slight chances of scattered precipitation. The Climate Prediction Center (CPC) expects below-normal temperatures and slightly below-normal precipitation from June 10-14. Towards the middle of the month, the CPC continues to predict below-normal temperatures and near-normal to below-normal precipitation.



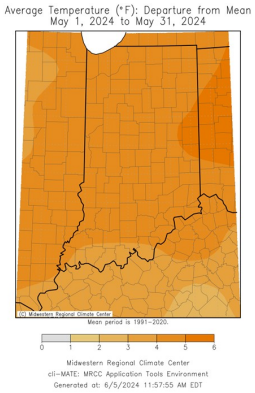


Figure 1: (Left) Average temperatures for May 2024. (Right) Average temperatures for May 2024, represented as the departure from the 1991-2020 climatological average.

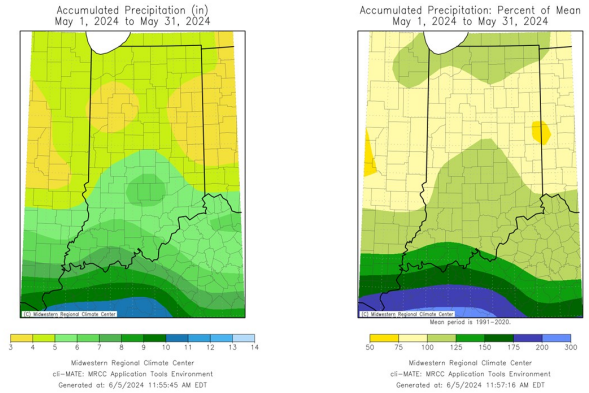


Figure 2: (Left) Precipitation accumulations for May 2024. (Right) Precipitation accumulations for May 2024, represented as the percent of the 1991-2020 climatological average.

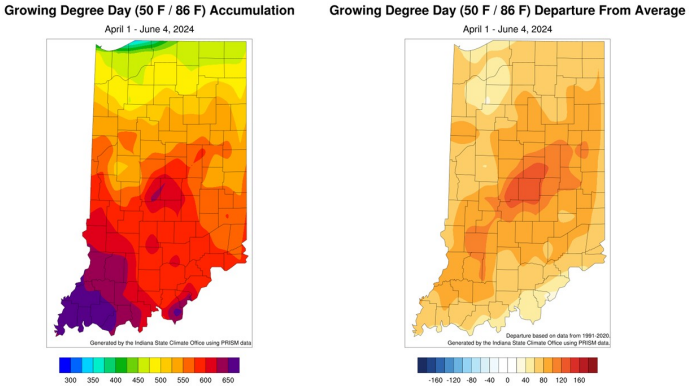


Figure 3: (Left) GDD accumulations from April 1-June 4, 2024. (Right) GDD accumulations from April 1-June 4, 2024, represented as the departure from the 1991-2020 climatological average.

Pest&Crop newsletter © Purdue University - extension.entm.purdue.edu/newsletters/pestandcrop
Editor: Tammy Luck | Department of Entomology, Purdue University, 901 Mitch Daniels Blvd, West Lafayette, IN 47907