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Pest & Crop Newsletter

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In This Issue

Black Moths Abundant Around The Farm

(Christian Krupke) & *(John Obermeyer)*

We've received questions about black, triangular moths flying around farms, homes, and yards, and especially to lights at night. These moths are actually mottled grayish-black and when at rest they have the triangular shape of a stealth fighter jet. These are likely the adult green cloverworm (Noctuidae: *Plathypena scabra*). Another large outbreak of these moths in Indiana occurred in 2016.

The slender green caterpillars feed on soybean foliage, as well as alfalfa, clover, and other leguminous plants – and there are obviously many of those plants scattered around the Indiana countryside! The caterpillars are quite common in soybeans. However, they are generally not at pest levels and their feeding is not economically significant. Normally, fungal pathogens, as well as insect parasites and predators, keep green cloverworm populations in check. Evidently, those natural controls were not as effective this year and allowed the cloverworms to increase in number. The result is lots of the adult moths flying around lights and residences.

These moths are only a nuisance and are completely harmless. The moths will pass the winter in leaf litter and/or other sheltered areas and next spring the survivors will emerge and begin egg laying.

Close-up of green cloverworm moth on a window screen. (*Photo Credit: John Obermeyer*)

Green cloverworm caterpillar. (*Photo Credit: John Obermeyer*)

Parasitized green cloverworm larva by a wasp. (*Photo Credit: John Obermeyer*)

Stalk And Ear Rots: The Importance Of Identifying Them Now To Help With Harvest Decisions

(Darcy Telenko) & *(Dan Quinn)*

It is now time to evaluate fields for any stalk or ear rot symptoms. This will aid in making assessments about field harvest order and if there is a risk of mycotoxin contamination. There are many factors that can

contribute to stalk decline. There are both plant pathogenic causes and abiotic stresses factors that can play a role in reduced stalk integrity, such as drought and flooding. Either way, as stalk tissue becomes compromised below the main ear the stalk may become brittle or weak and be prone to lodging.

As the corn plant loses photosynthetic leaf area due to different stresses such as foliar disease and hot and dry conditions, the amount of carbohydrates available for dry matter deposition into the kernels is also decreased. Therefore, plants respond by remobilizing non-structural carbohydrates from the stalk to supply the demand required by the developing kernels on the ear. This response causes stalk strength and integrity to decrease, and increases a corn plant's risk of lodging and infection from pathogens that cause stalk rot. Fields with large ear sizes and strong kernel set, which have a high kernel fill demand, may also be at the greatest risk.

Stalk Rots

There are a number of plant pathogens that can cause stalk rot including, Anthracnose, Bacteria, Charcoal, Diplodia, Fusarium, Gibberella, and Pythium. Some of these stalk rots have very characteristic symptoms that can help identify the specific problem, while others may require laboratory diagnosis (Table 1). The Purdue Extension Publication Corn Diseases: Stalk Rot has good images to help identify the major stalk rot diseases we see in Indiana (https://www.extension.purdue.edu/extmedia/BP/BP-89-W.pdf).

Table 1. Stalk rot pathogens, identifying characteristics, and management options.

			Management Options[a]			
Stalk Rot	Image	Characteristics	Resistance	Rotation	Tillage	Other
Anthracnose		Distinctive blackening of the stalk rind, loss of pith leads to shredded interior.	X	X	X	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Bacteria		Slimy, water soaked outer rind and pith.			Fall	Good drainage and plant health practices
Charcoal		Silver grey rind, peppered with microsclerotia – grainy, gray in color.	X			Many hosts. Rotation not as effective since microsclerotia can survive for many years
Diplodia		Many small, black pycnidia embedded in rind of lower internode- that cannot be scrapped off with thumbnail, white mold might appear in wet conditions, shredded pith.	X	X	X	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Fusarium		Dark lesions, external brown streaks on lower internode, internal shredding, sometimes a pale-pink to salmon color on rotted tissue.	X	X	X	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Gibberella		Small, black spots (perithecia) on internodes and nodes – these can be scrapped off with thumbnail, pink discoloration and shredding in pith.	X	X	X	Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Physoderma		Infected nodes will snap when pushed, node is black and rotten.		Maybe		Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging

Table 1. Stalk rot pathogens, identifying characteristics, and management options.

			Management Options[2]			
Stalk Rot	Image	Characteristics	Resistance	Rotation	Tillage	Other
Pythium		Decay of first internode about soil – soft, brown, water-soaked pith. Stalk may twist. Typically no odor.				Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging

Reference: Freije and Wise. Stalk rots. Purdue Extension BP-89-W. https://www.extension.purdue.edu/extmedia/BP/BP-89-W.pdf
Strong stalks, reduced susceptibility to foliar diseases, and production practices that promote good plant health may reduce potential for lodging
Image Sources: D. Telenko, Purdue PPDL, and K. Wise. [2] Management options that could be considered for future crops. Resistance may be available in some hybrids for the specific disease. Rotation and tillage can reduce inoculum potential in the field.

It is time to check stalk integrity – check field by using the **Push** or **Pinch Test** by evaluating 20 plants in at least five random areas in a field.

• **Pinch Test** – grab the stalk somewhere between the lowest two internodes and pinch between your fingers to see if the stalk is strong enough to handle the force – if the stalk collapses, it fails.
• **Push Test** – push the stalk to a 30-degree angle – if it pops back up when released, it passes the test, if not it fails.

Threshold: 10% or more of the stalks fail then consider field for early harvesting to avoid risk for lodging.

What can you do in the future – management options will depend on the specific disease (see table 1). Production practices that promote good plant health including balanced fertilization, appropriate plant populations, and good water management can reduce stresses that might predispose corn to stalk rot. In addition, these key management tools can help mitigate future stalk rot issues.

1. **Properly diagnosis the stalk rot pathogen.** (Samples can be submitted to the Purdue Plant and Pest Diagnostic Lab)
2. **Select hybrids with resistance** if available.
3. **Crop Rotation** – rotating to non-host crop will help reduce stalk rot potential in a field. Note that Charcoal rot and Gibberella stalk rot can infect other rotational crops in Indiana
4. **Tillage** – burying infected crop residue will encourage more rapid desiccation and help reduces risk of overwintering in crop residue.
5. **Good soil drainage and reduced compaction**.
6. **Foliar Fungicides** – applying foliar fungicides can help protect crop from foliar diseases that could predispose plant to stalk rot when present, but devoid of foliar disease pressure fungicides applications have not consistently been found to help reduce stalk rot.

Ear Rots And Mycotoxin Risks
Scouting for ear rots is also very important. The Crop Protection Network has a number of great resources to help scout and identify ear rots

• An Overview of Ear Rots
• Grain and Silage Sampling and Mycotoxin Testing

In Indiana, five ear rots can lead to mycotoxin production in corn. They include Aspergillus ear rot, Gibberella ear rot, Fusarium ear rot, and Penicillium ear rot. They can cause the production of five different mycotoxins in association with the different ear rot: Aflatoxin (Aspergillus), Deoxynivalenol or as also called DON/vomitoxin and Zearalenone (Gibberella); Fumonisins (Fusarium), and Ochratoxin (Penicillium and sometimes Aspergillus).

If a field has ear rot problems, it will be important to test the harvested grain lots for mycotoxins. The Grain and Silage Sampling and Mycotoxin Testing Resources publication provides a good reference on how to take a sample or sub-samples and a list of professional laboratories available to grain testing. In addition, harvest management for ear rots includes identifying and harvesting fields early, drying grain quickly to below 15% moisture, and storing in dry and cool conditions to limit fungal growth and mycotoxin accumulation.

Pest&Crop 2023 Survey

(John Obermeyer)

Dear Pest&Crop Readers:

Hope you have enjoyed the Pest&Crop newsletter this year. The following is a link to a simple, short online survey. Please consider doing this right now, as we need your evaluation of this newsletter. Too, we need to show our funding agencies whether or not this information from Purdue specialists throughout the season is meaningful to you and the industry. Thanks in advance for your support!

https://purdue.ca1.qualtrics.com/jfe/form/SV_0jJXXqIJGHiu0qW

How Dry Will We Get?

(Beth Hall)

Our dry spell continues. Sure, there's been a few passing showers, but Indiana is quickly seeing impacts magnify from the lack of rain. The latest U.S. Drought Monitor map shows the expansion of *Abnormally Dry* (D0) condition across most of the state (Figure 1). The very few counties not *Abnormally Dry* or in *Moderate Drought* (D1) are drying out but have yet to show the impacts the rest of the state has seen. This may change by next week with very little rain in the forecast between now and this coming Tuesday. Northeast Indiana has experienced the worst impacts so far with most of that region now designated in *Moderate Drought* (D1). Precipitation forecast over the next 7 days (through September 28th) has Indiana dry through most of the weekend with chances of rain across most of the state early next week. Amounts are currently forecasted to range between 0.5" to 1.5" (Figure 2). This will certainly help alleviate short-term impacts, but we may need more rain over the next few weeks to increase pond and creek levels to normal values for this time of year and see vegetation that is normally healthy in late September start to recover from this moisture deficit stress. Unfortunately, the 6-to-14-day precipitation outlook is favoring below-normal precipitation amounts over this period (through October 4th) with greater probabilities of drier-than-normal conditions near the end of that period.

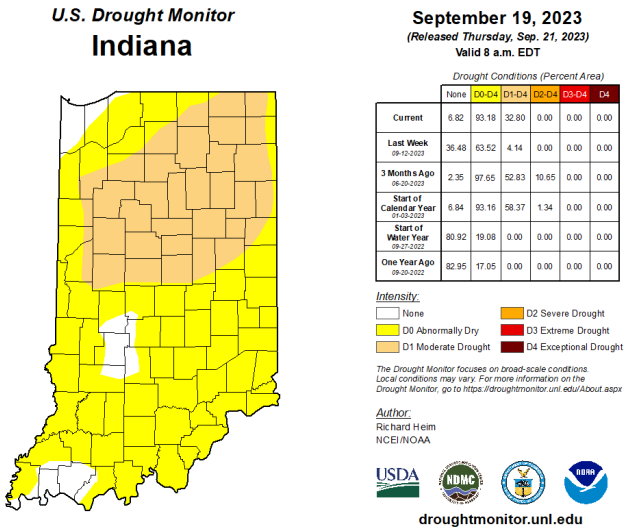

Figure 1. U.S. Drought Monitor conditions for data collected through Tuesday, September 19, 2023.

Figure 2. Seven-day total precipitation forecasted for the period from September 21-28, 2023. The small amount forecasted for Indiana is likely to fall after September 24th.

Temperatures have felt more fall-like this past week which means people are thinking more and more about mums and pulling out those Halloween decorations. I briefly considered putting out the Halloween lights at my house this past weekend, but my husband talked me out of it. Hey, at least I wasn't wanting to put out Christmas decorations! These fall-like temperatures are favored to shift to above-normal temperatures for this time of year over the next 6 to 14 days. Like the precipitation outlooks, the higher-than-normal temperature probabilities are highest near the end of this upcoming 2-week period. As modified growing degree-day temperature accumulations continue to slow down, Figures 2 and 3 show that since April 15th, Indiana ranges between 2400 (northern Indiana) and 3400 (southern Indiana) units. This is slightly below normal across most of the state.

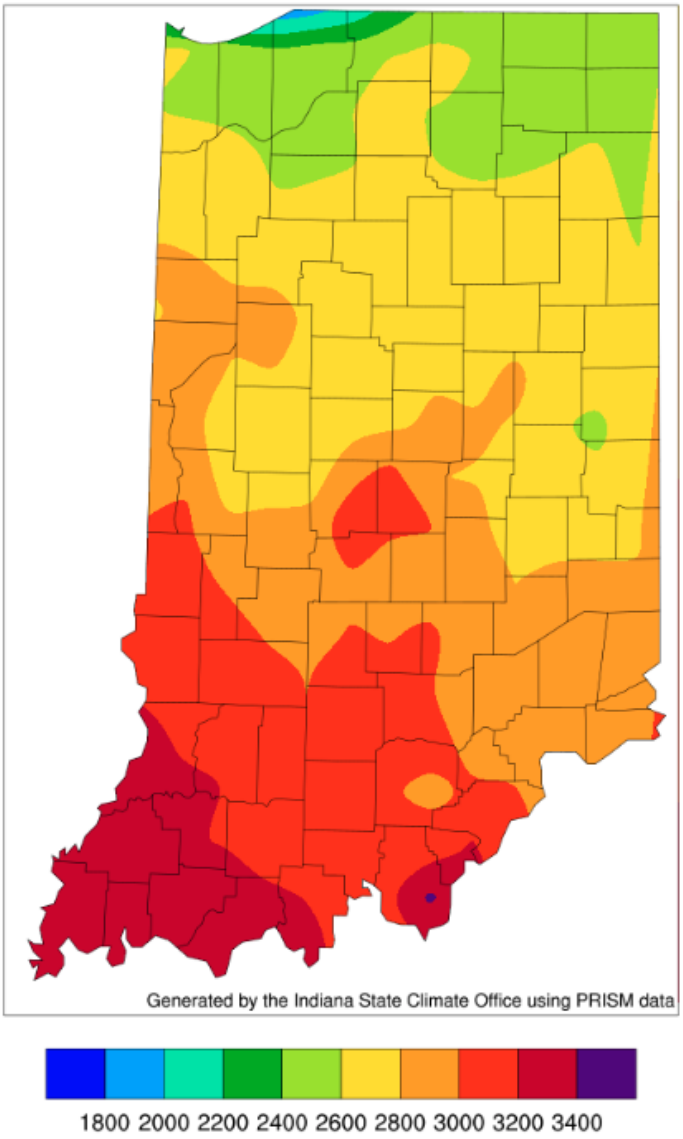

Figure 3. Modified growing degree day (50°F / 86°F) accumulation from April 15-September 20, 2023.

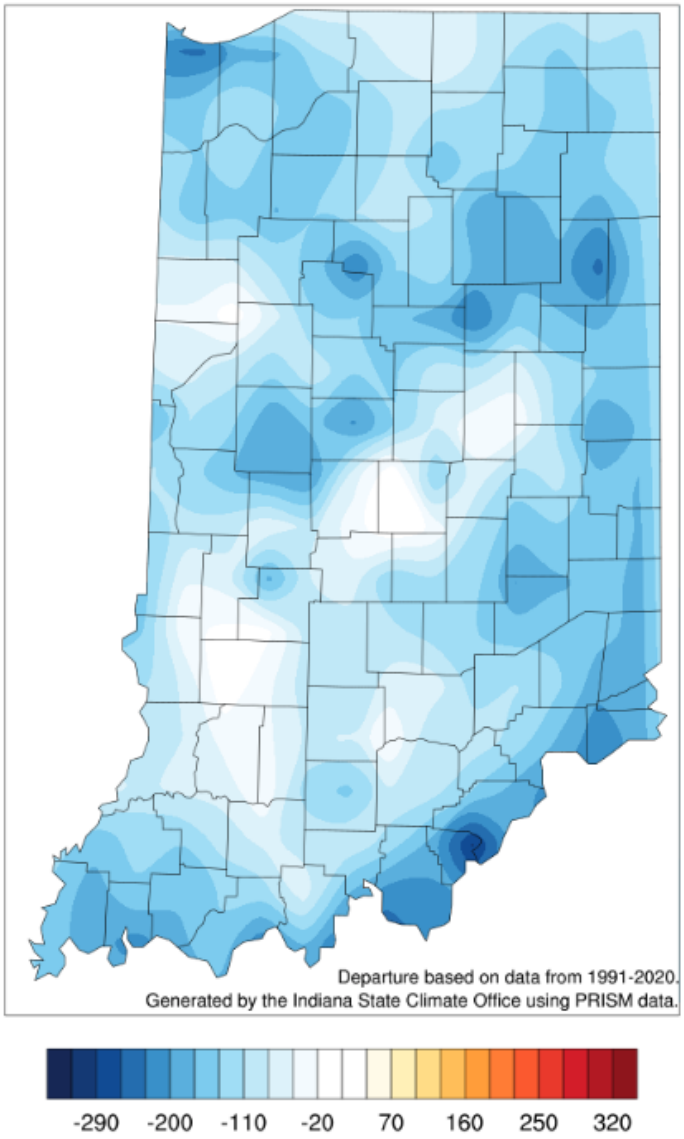

Figure 4. Modified growing degree day (50°F / 86°F) accumulation from April 15-September 20, 2023, represented as the departure from the 1991-2020 climatological average.

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