

**COSHOCTON COUNTY AGRICULTURE & NATURAL RESOURCES****July 8, 2020 Issue**

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Hello, Coshocton County! Wow, what a stretch of hot weather. Some of you may have used the phrases “it is just what the doctor ordered or that was a million dollar rain” The rain showers that came through yesterday were definitely what the doctor ordered and was just what our crops needed. It does appear the heat will stay with us. In today’s newsletter, I am including some articles OSU Extension has put out dealing with drier conditions.

Since mid-March our Extension staff has been working from our home offices due to coronavirus restrictions, Starting this Friday, we have been given the green light to open our office for limited hours to the public. We currently plan to be open Monday, Wednesday and Friday from 8:00 am – 5:00 p.m. Make to read the article on some of the new office procedures when you stop in-person. You can also reach us in our home offices by calling 740-622-2265. Stay well!

Sincerely,

***David Marrison***

Coshocton County OSU Extension ANR Educator



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AND ENVIRONMENTAL SCIENCES

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## Coshocton Extension Office Update

Since mid-March our Extension staff has been working from our home offices due to coronavirus restrictions. We are currently in the process of physically reopening our office. While many of our staff members are still working from their home offices, per direction of Ohio State, some employees will start to work as of Friday, July 10, 2020.

Office hours beginning this Friday, July 10 will be Monday, Wednesday, and Friday from 8:00 a.m. to 5:00 p.m. with 8:00 to 9:00 a.m. being reserved for the most vulnerable population. As we re-open, there will be some new guidelines in place; these include:

- We ask that you please call ahead of your visit so we can have your items prepared for you.
- We are rotating staff on different days, so calling ahead ensures that the appropriate staff member is there to meet your needs.
- One family will be allowed to come into the office at a time.
- Face masks are required (and we will provide one for you if you do not have one)
- Use of hand sanitizer required and is also provided

OSU Extension is committed to keeping you safe. We thank you for your patience during the past few months and as we move forward, helping to make the best better.

## July Brings on the Heat

By: Aaron Wilson

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-21/july-brings-heat>

Hot and dry conditions have certainly set in across the Buckeye State. Temperatures this past week have averaged 2-8°F above average, with most locations stringing together at least five consecutive days above 90°F and more to come. Based on the forecast, Columbus will likely reach 11 days this Friday, the longest stretch of 90-degree weather since July 21-31, 1999!

Along with hot temperatures there has been a lack of widespread rainfall, generally less than 0.25" statewide over the last seven days, with only brief heavy downpours for a few lucky folks across Ohio. Not only are we falling short on typical rainfall (~1" per week), but hot daytime temperatures have led to intense evaporation rates (0.25-0.30" per day). This has caused rapidly drying soils and decreasing stream flows. Abnormally dry conditions (not official drought) are now being reported (as of Thursday July 2) for about 17 percent of Ohio (Figure 1), with an expansion of these conditions anticipated this week. Please see this week's article on Drought and Fungicide. If you are seeing drought impacts in your area, consider submitting a report to the [Drought Impact Reporter](#). For more information on recent climate conditions and impacts, check out the latest [Hydro-Climate Assessment](#) from the [State Climate Office of Ohio](#).

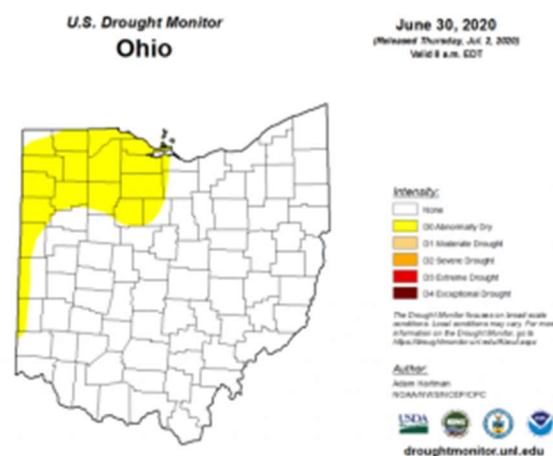


Figure 1: U.S. Drought Monitor for Ohio as reported on July 2, 2020.

No major weather systems are expected over the next few days across Ohio, but scattered storms with locally heavy rain are possible. Highs will generally top out in the 90s and lows in the upper 60s to low 70s. By Friday, a weak cold front will try to sweep through the state which will likely bring a better chance of widespread showers and storms and slightly cooler temperatures this weekend with highs in the 80s. Overall, we are expecting 0.25-0.75" (locally heavier) of rain over the next 7 days (Figure 2).



The latest [NOAA/NWS/Climate Prediction Center](#) outlook for the 8-14 day period (July 14-20) shows elevated probabilities of above average temperatures and below average precipitation (Figure 3). Normal highs during the period should be in the mid-80s, normal lows in the mid-60s, with 0.85-1.05" of rainfall per week. The [16-Day Rainfall Outlook from NOAA/NWS/Ohio River Forecast Center](#) supports below average precipitation across Ohio as well, especially in northwest Ohio where conditions are already quite dry. The forecast suggests deteriorating pasture conditions, added crop stress, and a lack moisture ahead of pollination and double-crop plantings.

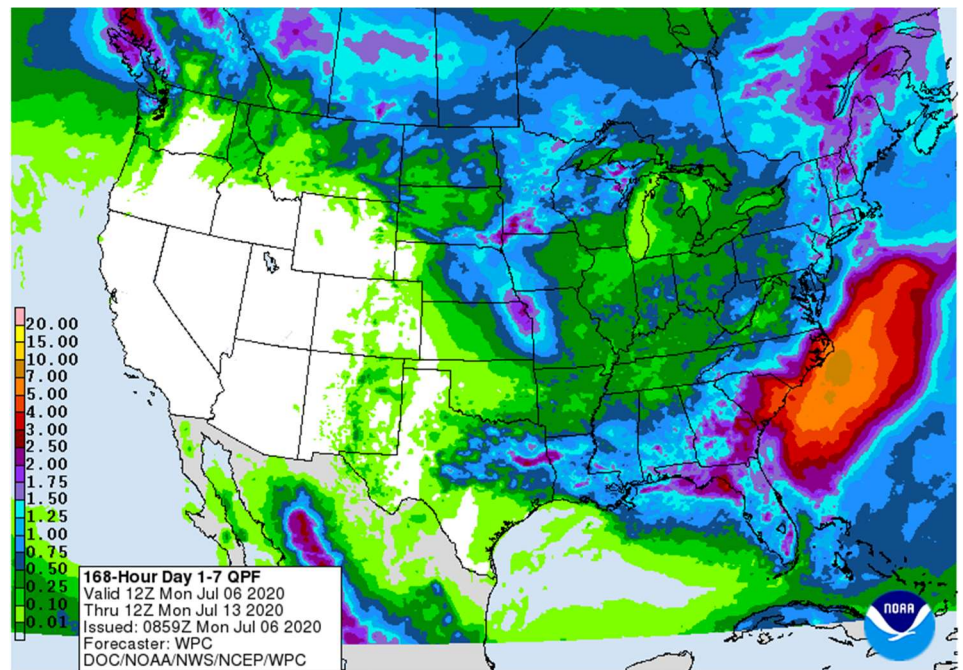


Figure 2: Forecast precipitation for the next 7 days. Valid from 8 pm Monday July 6, 2020 through 8 pm Monday July 13, 2020. Figure from the Weather Prediction Center.

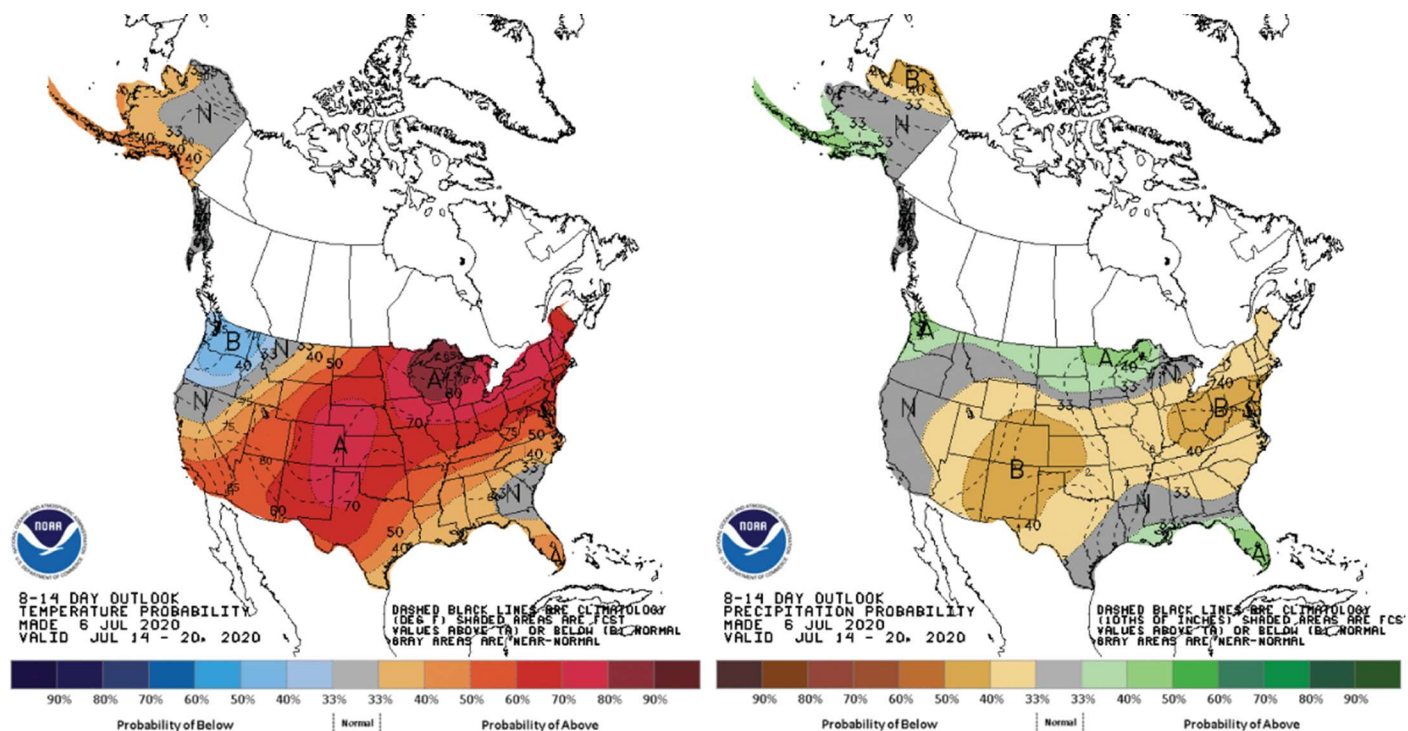


Figure 3: Climate Prediction Center 8-14 Day Outlook valid for July 14-20, 2020 for left) temperatures and right) precipitation. Colors represent the probability of below, normal, or above normal conditions.

## Foliar Fertilizer Application to Soybean

By: Laura Lindsey, Steve Culman, & Emma Matcham

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-21/foliar-fertilizer-applications-soybean>

### Foliar Fertilizer Applications to Soybean

When soybean prices are low, inputs need to be carefully considered. Will I get a return on my investment?

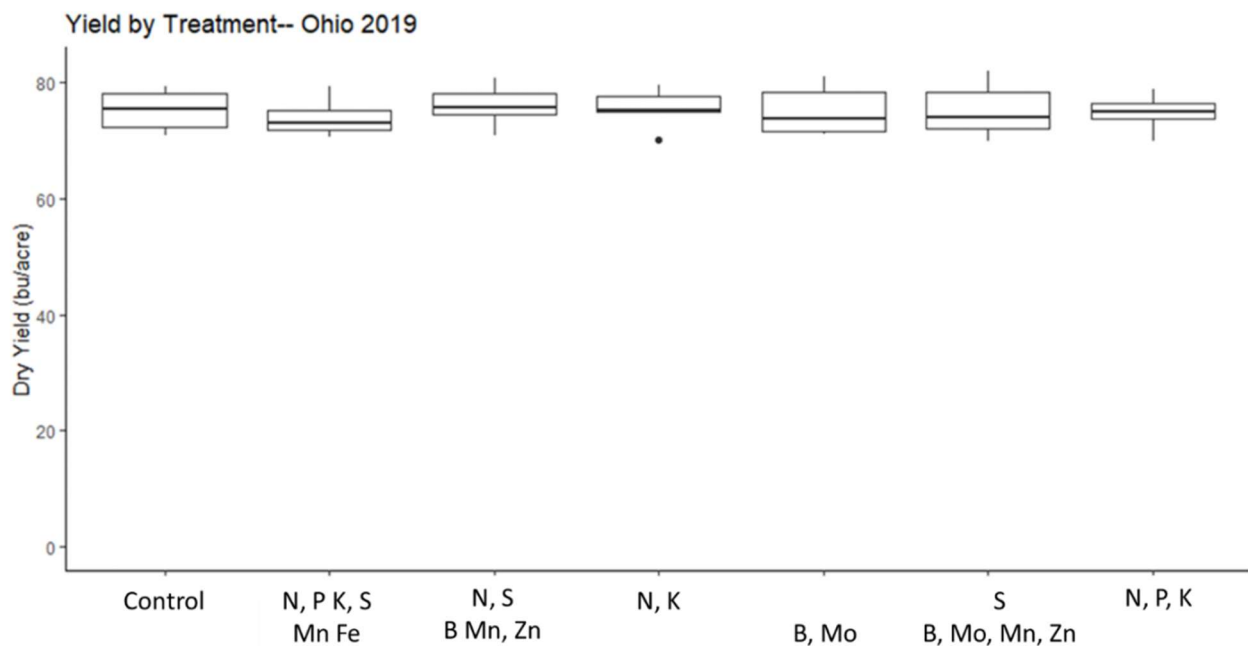
In 2019, Ohio State participated in a national protocol to evaluate foliar fertilizer in soybean. Trials were conducted in 13 states and totaled 20 different growing environments. In 2019, only 1 environment (Fond du Lac, Wisconsin) showed a yield benefit associated with foliar fertilizer application. Ohio-specific results are shown below.



In Ohio, none of the evaluated foliar fertilizer products resulted in a different yield compared with the non-treated control (no foliar fertilizer application). Our results are consistent with previously conducted trials in Ohio.

Historically, yield response to micronutrient foliar fertilizer application is rare. For detailed information, see Corn, Soybean, and Alfalfa Yield Responses to Micronutrient Fertilization in Ohio FactSheet (<https://ohioline.osu.edu/factsheet/agf-519>).

Although, yield response to micronutrient foliar fertilizer application is rare, there are cases where applications are warranted. In Ohio, manganese is the micronutrient that is most likely to be deficient in soybean. In our work, 2 out of 36 trials have shown a statistically significant yield increase with the application of manganese foliar fertilizer. One responsive location was in northern Ohio in a field with high sand content and dry soil conditions. (Manganese is oxidized to an unavailable form under dry conditions.) The second response location was in northwest Ohio in a field with high clay and high pH.



Soybean grain yield for the untreated control (no foliar fertilizer application) and foliar fertilizer products. Differences in yield were not statistically significant.



## Corn Growth in Hot & Dry Conditions

By: Alexander Lindsey & Peter Thomison

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-21/corn-growth-hot-and-dry-conditions>

In recent days we have been experiencing 90 degree F days with limited precipitation, and so we are starting to see some leaf rolling in corn. Some of this may be related to reductions in soil moisture, but may be related to restricted root systems as well. Depending on the stage of corn at the time of these conditions, different effects on yield may be expected. Corn ear development occurs throughout the growing season, and extreme temperature or moisture stress at different growth stages will decrease different aspects of grain yield. Below is a quick summary of the yield component most affected by environmental stress at different growth stages:



- V5-7: Number of kernel rows. Corn plants are determining the number of kernel rows as early as V5 in some corn hybrids. By V7, the number of kernel rows in the primary ear has been determined for most hybrids.
- V9-VT: Number of potential kernels per row (row length). Each potential kernel comes from one floret on the ear (female flower), and as conditions are more favorable for development the plant will initiate more florets. The number of potential kernels on the ear can be set through late vegetative stages (through V16).
- VT/R1: Number of potential kernels that are fertilized. High temperatures and moisture stress can cause pollen release to occur before silk emergence resulting in poor pollination, and can decrease pollen grain viability. Ear elongation is occurring during R1, and if stress occurs total ear length could be decreased. Yield losses have been estimated up to 13% per day of stress.
- R2-R3: Kernel number to be filled. Stress at the blister (R2) and milk (R3) stage can cause fertilized kernels to be aborted due to poor carbohydrate availability. Carbohydrate production will decrease as temperature and moisture stress increase because photosynthesis is reduced. The limited production of sugars will cause the plant to abort kernels, typically those that were the last to be pollinated (at the tip).
- R4-R5: Kernel size. At the dough (R4) and dent (R5) stages, carbohydrate accumulation within the kernels will be reduced due to environmental stress. At the start of R5, only 45% of the dry matter in each kernel has been accumulated, leaving half of the starch to be added during R5. However, the kernel contains 90% of its dry matter halfway through the R5 growth stage (milkline halfway down the kernel).

Given corn growth is maximized at 86 degrees F, temperatures exceeding this can result in reduced growth rates. Leaf area may decrease under stress conditions leading to less area available to photosynthesize, and internodes may not lengthen as much leading to shorter plants. Moisture stress can also be observed as leaf rolling. Rolled leaves help to shade the leaves by reducing the area in direct interception of light and to thicken the boundary layer (leading to less evaporation and slower water movement out of the leaves). However, leaf rolling can be seen even if soil moisture is evident under high temperatures and lower relative humidity levels. Be sure to watch the video on this topic at:

<https://www.youtube.com/watch?v=wg5torppV6U&feature=youtu.be>

Higher temperatures (especially at night) can lead to more respiration, which could reduce yield by metabolizing sugars (rather than moving them to the kernels). Hot days also mean faster GDD accumulation during the season and can shorten the number of days the crop has to photosynthesize and create sugars. For example, let's say a hybrid needed 1350 GDDs to reach maturity after flowering. With a daytime



temperature of 86 F and night temperature of 68 degrees F, it would take 50 calendar days to accumulate 1350 GDDs. Conversely, with a day temperature of 86 F and a night temperature of 63 F, it would take 56 calendar days to reach that same GDD accumulation.

In parts of the state there may be soil moisture present but root systems are being affected by soil compaction restricting growth. Another issue that has been observed is rootless or floppy corn. Seed planted in loose dry soil that becomes compacted after planting may be prone to this as well. If leaf rolling is showing up in your fields, consider digging some plants to assess the root systems and levels of soil moisture within the field.

Figure 1 – Corn showing leaf rolling symptomology.

Figure 2 – Rootless corn showing nodal roots developing outside soil environment.

### References

Abendroth, L.J., R.W. Elmore, M.J. Boyer, and S.K. Marlay. 2011. Corn growth and development. Iowa State Univ. Ext. PMR 1009.

Shaw, R.H. and J.E. Newman. 1991. Weather stress in the corn crop. Purdue Univ. Coop. Ext. Serv. NCH-18. Available at <https://www.extension.purdue.edu/extmedia/NCH/NCH-18.html> (verified 7-6-2020)

## **Mid-Season Weed Management in Soybeans- Hot, Dry Edition**

By Mark Loux

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-21/mid-season-weed-management-soybeans-%E2%80%93-hot-dry-edition>

A few weed-related observations while we try to stay cool and hope for a day of rain or at least popup thunderstorms.

- One of the frequent questions during extended dry weather is – do I wait for rain before applying POST herbicides, or just go ahead and apply before the weeds get any larger and tougher to control. Our experience has been that it's best to go ahead and apply when weeds are still small, even if it's dry, and herbicides will usually do what they are supposed to. Letting them get larger without any sure forecast for rain can make for a tough situation that requires higher rates or a more injurious mix. On the other hand, waiting to apply can be fine if there is a good chance of rain within the next few days. It's not always an easy decision.
- The deadline for applying dicamba to Xtend soybeans was June 30. Tavium can still be applied where the soybeans were planted less than 45 days ago and have not exceeded V4, an alternative to dicamba will have to be used. We should point out that very hot days and warm nights are not appropriate conditions for applying dicamba anyway.
- The replacement for dicamba on Xtend soybeans is usually going to be glyphosate or a mix of glyphosate with either fomesafen (Flexstar, etc), Cobra/Phoenix, or Ultra Blazer. Will they cause soybean injury? Yes. Will the injury be worse under hot conditions? Probably. Do you want weed control? We assume yes. Using a less aggressive adjuvant approach can reduce the injury. Example – applying fomesafen with MSO + AMS will be less injurious than COC + UAN. Be sure to use adjuvants appropriate for the weed species and size though.
- Applying POST herbicides early or late in the day may have some potential to reduce injury. Keep in mind however that the activity of most POST herbicides on weeds is reduced during overnight hours. In previous OSU research where we applied herbicides at 3-hour intervals from 6 am to 9 pm, activity was substantially reduced from 9 pm through 6 am. So activity was decreasing after 6 pm and ramping back up after 6 am. Our studies included fomesafen, glyphosate, Firststate, 2,4-D, and glufosinate. Of these herbicides, 2,4-D was the only one not affected by time of day. Giant ragweed was the only broadleaf weed in the 2,4-D study, which occurred in wheat stubble.
- Applying a mix or premix that contains a site 15 herbicide – acetochlor, metolachlor, pyroxasulfone, dimethenamid – often increases the risk and severity of soybean injury. It's late enough in the season that we would question the value of including residual herbicides. Weed emergence is tapering off, and

the dry forecast will prevent these herbicides from being active anyway.

- While it has not been much of an issue in Ohio, fomesafen can carryover and injury corn. This is most likely to occur for late-season applications followed by dry conditions that reduce the rate of degradation. We are at this point now, so consider a switch from fomesafen to another group 14 herbicide. There is no risk of carryover to corn for Cobra/Phoenix or Ultra Blazer.
- POST cutoff restrictions for a few soybean herbicides (DBH = days before harvest; from Table 18 of Weed Control Guide): clethodim – 60 DBH; Cobra/Phoenix – 45 DBH; Enlist Duo/One – no later than R2; fomesafen – 45 DBH; Fusion – prior to bloom; glyphosate – through R2; glufosinate – up to R1 and 70 DBH; Ultra Blazer – 45 DBH.
- We have had discussions with growers about doublecrop soybeans – whether to use a residual herbicide approach or just use POST herbicides. Herbicides that cause much injury and slow down growth should be avoided in doublecrop soybeans since time from planting to harvest is short. So the argument for a residual herbicide approach is probably best made in nonGMO or RR soybeans, where use of a site 14 herbicide might be required to control glyphosate-resistant weeds. Planting a LL, LLGT27, or Enlist soybean would allow use of effective POST herbicides without risk of injury. The argument against a residual herbicide approach is the possible lack of rainfall to get them working soon enough, their lack of activity on some glyphosate-resistant weeds, and possible increased carryover risk from applying this late. There are cost considerations also when making this comparison.
- The dry weather forecast has some growers abandoning plans for doublecrop soybeans. This is just a reminder to implement some type of weed control measures in wheat and barley stubble, with the goal of preventing weed seed and increases in the soil seedbank. Marestalk, foxtail, and ragweeds are common weeds in stubble, and waterhemp could be an issue. In previous OSU research on control of marestalk with herbicides in stubble, which can be difficult, applying before the end of July resulted in the most effective suppression of seed. Mowing or tillage can also be used to control weeds. Where mowing and herbicides will be combined, herbicides should be used first.
- Wheat stubble does provide the opportunity to work on Canada thistle, curly dock and dandelion, among other perennials. Most effective control of these weeds will occur where they are left undisturbed from late summer into October or early November, which allows them to reach a size when herbicides are most effective. In other words – don't mow or treat them so late in summer that they don't have enough time to regrow prior to a fall herbicide treatment.

## ***Drought Projections Do Not Go Well with Fungicide Applications***

By: Anne Dorrance

Source: <https://agcrops.osu.edu/newsletter/corn-newsletter/2020-21/drought-projections-do-not-go-well-fungicide-applications>

Several calls this past week for fungicide applications on corn and soybean at all different growth stages. So let's review what might be at stake here.

### Soybeans

Frogeye leaf spot and white mold on susceptible varieties when the environment is favorable for disease easily pay the cost of application plus save yield losses. Let's dig a bit deeper. Both of these diseases are caused by fungi but frogeye leaf spot is a polycyclic disease, meaning that multiple infections occur on new leaves through the season while white mold is monocyclic and the plant is really only susceptible during the flowering stage. Both of these diseases are also limited geographically in the state. White mold is favored in North East Ohio and down through the central region where fields are smaller and air flow can be an issue. Frogeye has been found on highly susceptible varieties south of 70, but it is moving a bit north so it is one that I am watching.





White mold is also favored by closed canopy, cool nights and high relative humidity. So farmers in these areas should double check their variety ratings first. If it is moderate to low score for resistance (read the fine print) then this year a spray may be warranted. We have gotten consistent control of white mold with Endura at R1. Herbicides that are labeled for white mold suppression have also knocked back this disease, but if a drought occurs or no disease develops, losses of 10% or greater can occur due to the spray alone. For these purposes R1 is a flower on the bottom of 1/3 of the plants in the field.

Frogeye leaf spot –There also must be some inoculum or low level of disease present in the field for this disease to cause substantial and measurable yield losses. This disease will only move in the canopy when there is regular rainfall. And again only on susceptible varieties. With dry weather, this will sit and hold. Time to scout for this will be at the end of flowering if it can be found in the field. With drought conditions, the disease will not impact the crop.

The story is very similar from a corn pathology standpoint. Most of our major diseases (gray leaf spot, northern corn leaf blight, eye spot) are driven by wet, humid conditions, consequently, the dry weather we have experienced over the last several days will keep most diseases in check. Fungicides are not warranted under these conditions; it just does not pay. Although some product labels may mention yield responses under drought-like condition, our data do not support such a benefit. We see the highest yield responses when fungicides are applied to susceptible hybrids at VT-R1 under disease-favorable conditions. These conditions would include extended periods of dew and high relative humidity, especially during the early- to mid-morning hours.

For a disease like southern rust that usually blows up from the south, and tar spot, an emerging disease of increasing concern in the state, fields should be scouted before making an application. Both diseases develop well under warm conditions, but they also need moisture and high relative humidity to spread. In the case of tar spot, based on what we have seen in 2018 and 2019, it usually develops well into grain fill (R4-R5), and as such, may have little effect on grain yield. Data from some states in the western half of the corn belt show that when tar spot develops early, yield loss may be substantial. The same is true for early southern rust development. So, scout fields to see what is out there and at what level before investing in fungicide application.

### ***Farm Animals Need to Keep Cool During Heat Waves Too***

Bill Halfman is an agricultural agent for the University of Wisconsin-Extension Monroe County

Source: <https://www.wiscontext.org/farm-animals-need-keep-cool-during-heat-waves-too>

Originally Published: July 22, 2016

Hot weather and a high heat index are a challenge for farmers each summer. During heat waves, farmers need to take precautions for their animals to minimize the risk of injury and sickness from prolonged exposure to high temperatures and humidity.

When it comes to the business of farming, heat stress can lead to a reduction in animal performance and efficiency. Reduced milk production and an increased risk to disease among dairy cows is a good example of this issue. Therefore, farmers implement a variety management practices to reduce the effects of high heat, to help ensure the health of the animals and produce safe, wholesome food for consumers.

Providing shade, air and water are the three most important components for helping keep animals comfortable during hot weather.

Shade is a critical component to helping animals cope with hot, sunny conditions. Some farmers keep their livestock inside well-ventilated buildings during the day and allow the animals to only go outside at night when it is cooler. But buildings are not the only source

“The good Lord made us all out of iron.  
Then he turns up the heat to forge some  
of us into steel.”  
Marie Osmond



of shade for animals. Other ways to provide shade include suspending shade cloth and or panels in areas that the animals can access.

Providing adequate ventilation is also key to helping keep animals cool. Newer farm buildings that house livestock are designed to circulate plenty of fresh air through them. Some examples include curtain-sided buildings and higher velocity fans. And improved ventilation systems are commonly retrofitted into older buildings.

Water is the third critical component for reducing heat stress in livestock. In addition to providing plenty of fresh clean water for animals to drink, farmers often use sprinkler systems to wet them down. The idea is to take advantage of evaporative cooling to help keep animals' body temperatures lower.

In addition to the housing, ventilation and water management considerations, farmers can implement additional management practices to help reduce the effects of heat stress on animals. Here are several actions: When livestock need to be hauled during hot weather, farmers commonly do this very early in the morning — around 3 or 4 a.m. — as it is often the coolest part of the day. For example, farmers load the animals in a low stress manner, put fewer animals in the trailer than during cooler weather and get moving as soon as possible. The goal is to do the hauling as efficiently as possible, and reach the destination and unload with reasonable speed. During extreme heat, farmers may choose to wait until cooler weather to haul.

Feeding times or the amount of feed can be adjusted. The idea is to make sure the bigger meals that generate the most body heat during digestion are fed later in the day when temperatures are likely to be cooler. Practices such as veterinary checks, vaccinations and other routine health management can be done early in the morning or delayed until weather conditions are cooler. More frequent check of the animals' well-being is also a common practice during hot weather conditions.

Taking care of people is also important during heat waves, and many of the same principles used to keep animals comfortable apply to the humans caring for them. Re-arranging work schedules to avoid heavy tasks during the hottest parts of the day, taking frequent breaks and staying hydrated are critical to keeping everyone healthy.

### ***Pasture Walk Scheduled for July 28***

Area beef producers are invited to join the Coshocton Soil & Water Conservation District, Natural Resource Conservation Service and OSU Extension at a Summer Pasture Walk on **Tuesday, July 28** at the Jim Schumaker farm located at 21991 County Road 124 in West Lafayette, Ohio starting at 6:30 p.m. During this pasture walk, attendees will learn about a new grazing system and conservation practices installed at the farm.

We hope you join us for this informal walk. Attend and gain ideas on how you can improve your grazing system and beef handling system. There is no cost to attend and light refreshments will be available. Reservations are not required but appreciated. Call the Coshocton SWCD at 740-622-8087 ext 4 (or email [samanthadaugherty@coshoctoncounty.net](mailto:samanthadaugherty@coshoctoncounty.net)) for more details or to pre-register.

