Field Crops Newsletter

Granville and Person County
Mikayla Berryhill

A Note From Your Agent…I Have News!

Figure 1. Mikayla and Bryce during their engagement and a SURPRISE!

First off, I would like to tell each of you that my heart goes out for you this season. It has definitely been a rough one, and some have been hit harder than others. You have all been in my thoughts as we have worked through weather extremes, high disease pressure, and more problems than I can count this year. Please do not hesitate to reach out if there is anything I can do for you. I am more than happy to write insurance letters, advocate to the FSA for the struggles you are facing and communicate to NC State's faculty on support you need from future research.

To end this note to you on a happier topic, I have some news…I'M PREGNANT! Bryce and I are very excited to welcome a Baby Berryhill to the world in March of 2025! I currently have no work restrictions, so please do not hesitate to call me out to your farm if you have any issues. I will also be working as long as I am physically able to, so you will still see me at extension events and out on your farms for the next 7 months or so!

Again, please let me know if there is anything I can do to support you this year. I am here for you in any way I can be.

Interested in entering a North Carolina Yield Contest? Let me know!

While your yields this year may not be the best, it will be that way across the state so a decent yield could be a winner! Soybean yield contest requires at least 3 acres harvested and the corn yield contest requires 1 acre harvested. Go ahead and contact me if you are interested so we can discuss the process.

AUGUST/SEPTEMBER 2024

INSIDE

This newsletter is designed to give you up to date information on crops from NC State University and other sources. For more information:

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person.ces.ncsu.edu

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Oxford, NC 27565

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Dealing with Ear Rots in Drought Damaged Corn

By: Drs. Ron Heiniger and Daisy Ahumada

Damage from Fungal Infections and Ear Rot

Drought can significantly impact corn production in several ways. Early-season drought can cause stunting, poor nodal root systems, reduced ear size potential, and overall, more susceptible corn plants. When a rain does occur, ear rot fungi can grow on stressed corn, leading to ear rot and kernel damage. This damage can cause substantial yield loss and the production of mycotoxins, making the grain unusable for feed or food.

What Makes Corn More Susceptible to Infection During a Drought?

Fungal infections of the ear often occur during pollination. Drought stress disrupts the synchronization between pollen shed by the tassel and the emergence of silks from the ear, increasing the likelihood that pollen will not be viable when it reaches the silk tube. As a result, the silk tubes often become longer and more susceptible to the fungal spores. Additionally, kernel sites where pollination failed create ideal conditions for harboring and incubating fungal pathogens.

Why are Ear Rots Worse in Some Seasons?

Although infections begin during pollination, the severity of ear rot damage depends on favorable conditions for fungal growth from corn pollination to physiological maturity. Frequent rainfall creates the high humidity and moisture levels needed for fungal growth and reproduction. Drought damage can result in poor shuck coverage, allowing water to penetrate the shuck and remain trapped next to developing kernels. Once the corn reaches physiological maturity and the black layer forms, fungi will continue to grow and produce mycotoxins within infected kernels.

Common Ear Diseases in North Carolina

1. Common smut, caused by fungus *Ustilago maydis*, is frequently found in North Carolina. The fungus tends to favor sites on the ear where pollination has failed, resulting in the formation of unsightly black or blue-black galls. Ungalled kernels from smutted may contain higher levels of mycotoxins (i. e. fumonisins).

2. The most common ear rot fungi are *Aspergillus flavus* and *Fusarium spp*. In addition to severely affecting kernel growth and weight, these fungi produce several mycotoxins that are harmful to livestock and humans. By law, corn with high levels of aflatoxins and fumonisin cannot be sold and should not be harvested.

3. Other fungi such as Diplodia (*Stenocarpella maydis*), Penicillium, and Trichoderma ear rot are not as common in North Carolina, but can occur in years with severe drought. *Diplodia* and *Trichoderma* can result in severe reductions in kernel weight and sprouted kernels, but these fungi are not associated with mycotoxins. *Penicillium spp*. Can produce PR Toxin and Ochratoxin A, which are not regulated by law.

What Should I Do to Reduce Damage Caused By Ear Rot?

Prevention is the most effective method for reducing ear rot. Although different hybrids exhibit varying levels of resistance, there is limited independent information available to guide hybrid seed selection. In seasons with extreme conditions, avoiding drought stress can be challenging. Therefore, growers should focus on minimizing damage. Regular scouting for visible signs of damage and mycotoxins is essential. White, gray, or green mold or white and pink streaking in the kernels at the tip or base of the ear are indications of an ear rot fungus, but not necessarily mycotoxins.

How Do I Determine If I Have a Problem?

Growers should hand-harvest 100 ears of corn from a representative area of the field, preferably from consecutive plants in a row or samples of 10 or more consecutive plants. After removing the shuck, select the 10 ears showing the worst ear rot damage. Place these ears side-by-side to assess the average amount of kernel damage (Figure 2). If more than 25% of the kernels on these 10 ears are damaged, there is a severe problem. To determine the extent of the problem, combine these 100 ears and shell enough to produce a 5-pound sample.

Figure 2. Top ten ears show little or no ear rot damage. On average, the bottom ears show 5-7% kernel damage

Dealing with Ear Rots in Drought Damaged Corn… *Continued*

This sample should be sent to the NCDA marketing lab to test for mycotoxin levels. If aflatoxin levels are above 20 pbb or fumonisin levels above 50 ppm, the grain cannot be marketed for food or feed, and the grower should avoid harvesting or mixing this grain. If levels are below these thresholds, the grower should harvest the grain as soon as possible. It is illegal to blend corn with aflatoxin concentrations greater than 20 ppb. If aflatoxin concentrations exceed 20 ppb, the only option is to

dispose of the grain as a toxic substance, typically spreading it back on the field and incorporating it into the soil as fertilizer. Because it is more cost-effective to avoid harvesting aflatoxin-contaminated corn, implementing a good scouting program is important. If 10% to 25% of the kernels on the 10 worst ears are damaged, the field should

be re-examined after any additional rainfall and scheduled for early harvest. Harvesting at more than 25% moisture and drying to 15.5% moisture will significantly reduce harvest losses when compared to waiting for the corn to dry naturally to 15.5%. Avoid feeding moldy kernels, especially those that are pink and green, to personal livestock. To store affected kernel, dry corn to 13% or less to prevent fungi from growing and producing mycotoxins. If ear rot is severe, store kernels in a cool area (below 15°F), and do not store infected corn longer than a year. Sanitizing and rinsing equipment to remove soil and spores after use is good practice for managing most diseases. Ensure that runoff water does not flow into 'clean' fields.

The Bottom Line

SCOUT the fields for mold and, if present, have a sample analyzed for mycotoxins. If moderate to severe amounts of mold are present, plan to HARVEST EARLY to prevent further infection. Contact your crop insurance agent about assessing your loss. Take advantage of all the disaster relief available by documenting loss and obtaining independent assessments of yield potential.

TESTING LABS

The North Carolina Department of Agriculture will test feed or grain samples free for aflatoxins and $75 for fumonisins.

There is a digital, fillable form at: https://apps.ncagr.gov/AgRSysPortalV2/forageanalysisreport

OR you can contact the extension office and we will print the form off for you.

AFLATOXIN TEST KITS

Neogen Corp.
620 Lesher Place
Lansing, Michigan 48912
Phone: 800-234-5333
There are two kinds of kits. The simple kit identifies the presence of aflatoxin. The advanced kit identifies the presence of aflatoxin and level of infection.

A NOTE FROM YOUR AGENT

Growers who utilize their own corn for feeding animals. Have different aflatoxin and fumonisin level restrictions than that at the feed mill. Please see the charts below for maximum levels for different livestock animals. This data is from the Office of Indiana State Chemist (OISC) of Purdue.

Figure 3. GUIDANCE LEVELS FOR TOTAL AFLATOXINS IN CORN FEED

Class of Animal	Maximum AFLATOXIN Level
Immature animals and poultry	20 ppb
Dairy Animals	20 ppb
Breeding cattle and swine	100 ppb
Mature poultry	100 ppb
Finishing swine over 100 lbs	200 ppb
Finishing beef cattle	300 ppb

Figure 4. GUIDANCE LEVELS FOR FUMONISIN IN LIVESTOCK FEED

Class of Animal	Portion of Diet	Maximum FUMONISIN Level
Horses	Non-roughage portion of diet -- **Do not feed corn screening**	5 ppm
Swine	Total ration	10 ppm
Poultry	Total ration	50 ppm
Beef cattle	Non-roughage portion of ration	50 ppm
Dairy cattle		No recommendation

NC State University – Tobacco Connection: Vol. 1, Num. 3

By: Drs. Matthew Vann and Daisy Ahumada, Mrs. Bryant Spivey, Norman Harrell, and Dwayne Dabbs

In the wake of Tropical Storm Debby, many individuals throughout the tobacco supply chain have asked what the impact will be moving forward. While it is too early to determine the full extent, the storm undoubtedly reduced the production potential of the 2024 flue-cured tobacco crop in North Carolina and other states.

Tropical Storm Debby affected North Carolina from August 7th to August 9th, 2024. The storm entered North Carolina through Anson County, along the South Carolina border, and moved northward through Montgomery, Davidson, Forsyth, and Surry counties. Most of the state was on the storm's more intense eastern side. Rainfall averaged over seven inches in some areas, such as Sampson and Duplin County. Wind gusts exceeding 20 miles per hour were also documented in multiple tobacco growing regions across the state, contributing to significant tobacco leaf deterioration. Both wind and rain have impacted tobacco, especially since much of the tobacco had not yet been harvested when Debby arrived in North Carolina.

All types of commercial tobacco are vulnerable to damage from tropical storms and hurricanes. Due to the high economic value and the fact that the leaves are the harvested part of the plant, financial losses in tobacco can be significantly higher when compared to other agronomic crops. Tobacco is vulnerable to extreme weather events, such as hurricanes and/or tropical storms due to several factors:

Wind Damage: As tobacco plants mature, they become increasingly susceptible to wind damage. Wind can dislodge leaves from stalks, cause physical damage (such as shredding), and trigger ethylene production, leading to rapid leaf deterioration. One of the more significant issues is tobacco being blown over, which requires the plants to be stood up before normal management practices can resume. However, this can only be done once the soil is no longer saturated.

Figure 6. Wind damage on tobacco in Person County.

Figure 6. Water damage on tobacco in Person County.

Water Damage: Standing water and saturated soils pose significant risks. Waterlogged soils lack sufficient oxygen for roots, leading to root decay, and subsequently, leaf deterioration if saturation persists for more than 48 hours. Sufficient drainage to alleviate saturation may take two to three days. In areas with clay-rich soil, drainage may take longer than two or three days, increasing the likelihood of root deterioration, even in the absence of disease.

Heat Stress: High temperatures can accelerate leaf deterioration, with sunscald occurring, due to wilting, moisture loss, and root damage. Heat indices above 95°F are concerning for the holding ability of the crop.

Disease Risk: Soilborne and foliar disease are also concerns. For example, the causal agent of tobacco black shank is a water mold that spreads by water and thrives in saturated soils. As root health declines and wounding increases, black shank infections can develop and spread further. High humidity and dense vegetation can promote foliar leaf diseases, such as target spot, brown spot, frogeye leaf spot, and/or angular leaf spot.

Below are some key management topics and observations that have been made by tobacco faculty and Extension Agents in the aftermath of Tropical Storm Debby:

Leaf Deterioration: In tobacco fields most impacted by saturated soils and wind, leaf deterioration has proven unavoidable and irremediable. Fertilizer and fungicides are unlikely to be effective because the plants are dying. The change in leaf color from green to yellow is not a result of nitrogen loss, and may not always be attributable to disease. Foliar fungicides should only be recommended on healthy tobacco, where disease is present, following EPA labels.

Harvest Delays: The 2024 harvest season was delayed due to adverse weather in May (wet) and June (dry) that extended the normal growing season. According to a USDA crop progress report, only 19% of the 2024 crop had been harvested before Tropical Storm Debby, which is likely lower than historical averages for early August.

Harvest Challenges: Saturated soil conditions prevented machinery from entering fields for several days. Labor shortages may have further delayed harvesting. Standing up blown-over tobacco was delayed, due to saturated soil conditions. In some cases, this was the second or third time that tobacco had to be stood up. While this should be done in some cases, multiple attempts to stand up or straighten tobacco stalks increases the risk of physical damage. Wind-blown tobacco leaning in the field was impossible to harvest with machines.

Salvage Efforts: Where possible, producers are encouraged to harvest fields as quickly as possible, starting with the worst fields first to salvage leaves before further deterioration.

Yield and Quality Concerns: Questions about potential yield and quality impacts have also been discussed. While the full impact of Tropical Storm Debby is not yet known, comparisons to Hurricane Florence in September 2018 suggests that similar challenges in yield and quality may arise, with some differences. Unlike Debby, Florence was a multi-day hurricane with stronger winds, and made landfall in North Carolina in September, nearly one month later in the harvest season. An article (go.ncsu.edu/tobaccoarticle2018) posted September 19th, 2018 highlights some of the specific issues documented after Hurricane Florence.

We strongly encourage tobacco growers to consult with their local Extension Agent as they attempt to navigate the decisions in the aftermath of Tropical Storm Debby.

Planting to Reduce Head Scab

By: Dr. Christina Cowger and Jenny Carleo – adapted from the US Wheat & Barley Scab Initiative

It's time to start preparing for winter small-grain planting. Here are some planting tips to aid in managing Fusarium head blight (FHB), also known as head scab.

Tip #1: Plant wheat and barley varieties with some resistance

Disease management should start with variety selection, as it's your best bet for reducing FHB. Check out the NC OVT Website (https://officialvarietytesting.ces.ncsu.edu/small-grains-2024/) and scroll down under Commercial Wheat Data to "2024 NC OVT Wheat Data Tables" for a table that includes FHB ratings. S = Susceptible, MS = Moderately Susceptible, and MR = Moderately Resistant. No varieties are fully resistant to FHB. Stay away from varieties rated S!

Tip #2: Practice good crop rotation with a non-host crop.

If possible, avoid planting winter wheat and barley following corn or other small grains as these are hosts for *Fusarium graminearum*, the main causal agent of FHB. These crop residues can increase population levels of the fungus in the field and increase the risk of disease developing.

⇒ It is advised to rotate production with non-host crops (i.e., soybean or other legumes).
⇒ Studies from Minnesota indicate that fields previously planted with soybean had lower Fusarium inoculum, FHB, and deoxynivalenol (DON) compared to fields previously planted with corn or wheat.

Tip #3: FHB risk is increased when planting wheat or barley into no-till corn stubble.

While tillage does bury residue that could harbor inoculum, soil conservation approaches are widely used. No-till and reduced-tillage are common in North Carolina's Piedmont because they are good approaches to sustain soil health and reduce soil erosion. These benefits may outweigh the benefits of Fusarium inoculum reduction through tillage.

⇒ Growers are especially encouraged to choose a resistant variety when planting in no-till or reduced-tillage production systems.

EPA Release of Final ESA Herbicide Strategy: Soy Growers Disappointed, Wary of Expected Impact

Washington, D.C. August 20, 2024. With the release of the Environmental Protection Agency's final Endangered Species Act Herbicide Strategy (https://www.regulations.gov/document/EPA-HQ-OPP-2023-0365-1137) comes ongoing concerns for soy growers worried about feasibility of implementation and its impacts.

Josh Gackle, president of the American Soybean Association and a soybean farmer from North Dakota, said of the final ESA Herbicide Strategy, "While there are clear improvements to the final Herbicide Strategy over what was first proposed, we are disappointed EPA chose to leave so many opportunities on the table to make this strategy workable for U.S. agriculture. We remain concerned with the complexity of this framework and whether growers and applicators will be able to clearly understand how to implement it. Likewise, we continue to have concerns as to the type and affordability of runoff mitigations EPA has provided, the potential distance of spray drift buffers, the number of mitigations farmers will need to adopt, and whether these requirements are supported by the best available science, as the law requires. As finalized, the Herbicide Strategy is likely to cost U.S. farmers billions of dollars to implement and could result in significant new hurdles to farmers accessing and using herbicides in the future."

Another significant improvement EPA largely has not addressed is how the agency evaluates whether pesticides pose a genuine risk to endangered species. As ASA and over 300 other groups noted in a letter to EPA (https://soygrowers.com/wp-content/uploads/2024/07/7-22-24-ESA-Risk-Assessment-Reform-Letter.pdf) several weeks ago, the agency's current process is unduly conservative, greatly overestimates risks, and demands farmers adopt far more restrictions than are truly necessary to protect species. Disappointingly, the final Herbicide Strategy does little to address these concerns. As requested in our letter, we hope EPA will take us up on our invitation to discuss this central piece of its ESA regulations in the days ahead.

Gackle concluded, "While we appreciate the Herbicide Strategy restrictions will not take effect immediately and that EPA plans to implement them in individual pesticide registration decisions moving forward, ASA will carefully observe how closely EPA adheres to its strategy in those proposed decisions. While we support EPA becoming compliant with the Endangered Species Act, it is essential that the agency's approach meets its legal obligations and is workable for agriculture. The final Herbicide Strategy does not satisfy these needs. We look forward to continuing to work with EPA to do better in the next phase of implementation."

*The **American Soybean Association (ASA)** represents U.S. soybean farmers on domestic and international policy issues important to the soybean industry. ASA has 26 affiliated state associations representing 30 soybean-producing states and more than 500,000 soybean farmers. More information at soygrowers.com.*

Upcoming Events:

Keeping the Farm Workshop

October 29th, 2024 @ 8AM

- Granville County Convention & Expo Center (4185 US-15 Oxford, NC)
- Information for farm and forest landowners on stewardship and preservation: taxes, estate planning, conservation practices, and more.
- Snacks and drinks will be provided.
- Register at go.ncsu.edu/keepingthefarm24