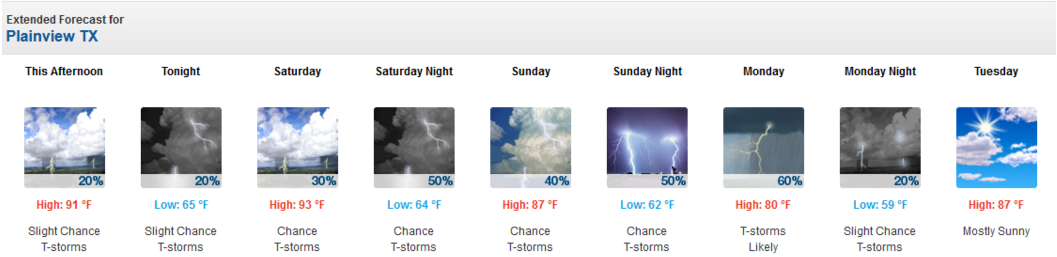
Plains Pest Management News

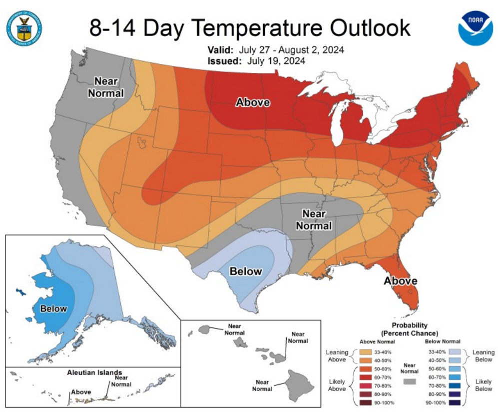
JULY 19, 2024

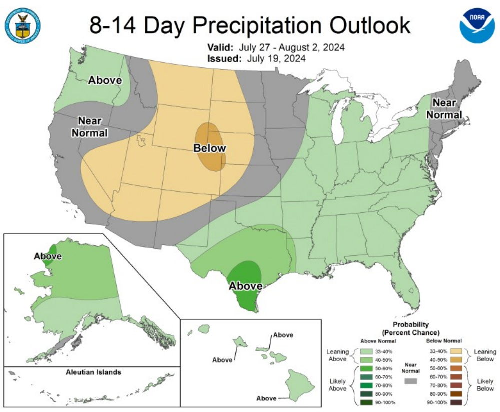
General Status

With just a few cotton showers in the area this week, most of our fields are feeling the drought and irrigation is getting stretched. I have noted several abandoned corn acres in the area, but most fields, including dryland, are fairing pretty well so far. Most still have ample potential but we are needing ample, additional, and beneficial rainfall very soon to realize as much potential as these fields still have. Without additional moisture support soon, quite a few fields may start losing potential yield quicker than most realize. Still, a rotation of fresh pests, disease, and always weeds threatens that same yield potential this week.

Despite adversities, examples of area fields still hold potential but need more moisture soon.







Cotton

In many cases once cotton fields reach bloom stage, they seem to be racing though the nodes above white flower stages. While fruit retention remains high, this is a hint that potential and serious drought stress is near. We have plenty of area fields that zoomed from 8 NAWF last week to 5 NAWF and into peak water use this week. Bolls are being set, and major drought stress fruit shed has not begun in our fields, but many fields are or will be reaching peak water use much earlier than average without additional moisture support.


SW Hale cotton setting fruit during its first week of bloom this week.

Our full range of PPM scouting program cotton stages ranged from regrowth from hail damage up to 4.9 NAWF and just about everything in between. Most were between 8 and 5 NAWF with the best irrigated or conserved moisture fields in the second or third week of blooming holding above 6 or 7 NAWF and those just reaching first bloom blooming at 7-9 NAWF. Some of these 'wetter' fields even indicated a need and or additional need for Plant Growth Regulator treatments to prevent rank growth. We still have a minority of fields still not reaching 1st bloom yet and are aware of some very late area cotton not yet squaring.

Much of our scouting this week was focused on making certain of our agronomic measurements as many fields were changing so quickly. For pests, scouting was truly wide. In the latest fields fleahoppers are still a major risk. In blooming fields, especially those with developing and sizable bolls, Lygus, bollworms, and stink bugs were our focus. Despite roadside and CRP maintenance and several area hay fields being swathed, we have not noted any increase in Lygus in and bollworms were almost completely absent. Stink bugs, of varying species a, were present in about ½ our fields with the highest population coming in at around 1 stink bug / 6.5 row feet and no notable boll damage found. Our Texas thresholds are based upon percent boll damage (6-8%) but because they are not an annual or common pest for the High Plains, we are utilizing other methods to determine presence before initiating boll dissection to find stink bug damage for an evaluation. We did find a few fields with cotton aphids in them, but at very low levels of well below 0.01 per leaf with pre-open boll thresholds being around 50 per leaf. These aphids were in small, establishing colonies around fruiting sites.


Lygus adult: Porter

Sorghum

The SCA infested field showing no outward signs of infestation by small colonies on the lower leaves.

While nothing reached threshold in our few PPM sorghum fields, we have some pest 'excitement' to watch. The sorghum aphid has infested one of our southwestern Swisher fields. Our fields are all in bloom to early dough stages and have been almost pest free until the welcome finding of corn leaf aphids in most fields last week. This week, the best irrigated sorghum field, and most easterly, was found with establishing populations of the sorghum aphid, the pest formerly known as the sugarcane aphid. In this infested field, 35% of the plants had sorghum aphids present at some level, but only 2.4% of the plants held a colony of 50 or more aphids with most being establishing colonies with active beneficial populations around them fresh from finishing off the mentioned corn leaf aphid colonies from last week. Despite the notably high percentage of infested plants, these colonies remained hard to spot consisting mostly of winged females or fresh adults just beginning reproduction. We will be watching these fields closely for these aphids over the next few weeks with the reproductive capabilities of the aphid being so profound. For post boot stage sorghum, the threshold for sorghum aphid remains at 30% of the plants infested with sizable colonies of 50 or more aphids.

The typical range of SCA colony size in this field this week.

In our fields we found very few other pests of note. There were some very light populations of Banks grass mites starting in the drier fields and a few stink bugs in the dough stage heads. We also noted some grasshopper feeding on a few grains of a few panicles, but not nearly enough to justify treatment. We still have not spotted any sorghum midge with this being the last week these fields will be blooming and despite some light fall armyworm damage, dating back to the whorl stages on some leaves, we have not found any headworms of any species in sorghum this week.

Grain Sorghum Action Threshold

Growth Stage	Decision threshold specific to the sugarcane aphid
Pre-Boot	20% of plants with presence of aphids
Boot	20% of plants infested with 50 aphids per leaf
Flowering - Milk	30% of plants infested with 50 aphids per leaf
Soft Dough	30% of plants infested and localized areas with heavy honeydew and established colonies
Dough	30% of plants infested and localized areas with heavy honeydew and established colonies
Black Layer	Heavy honeydew and established aphid colonies. Only treat to prevent harvest problems. Observe Preharvest intervals

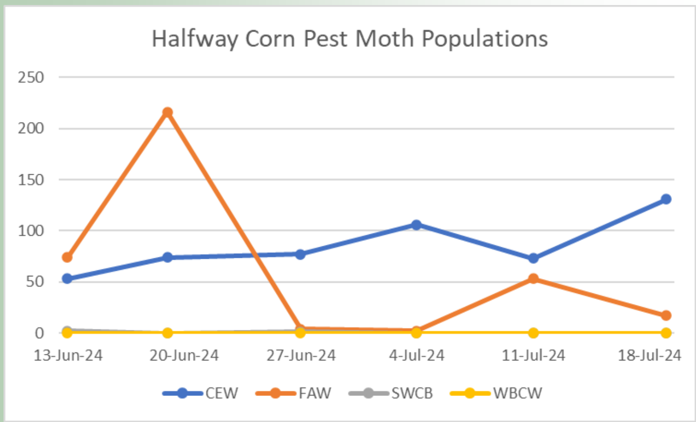
Corn

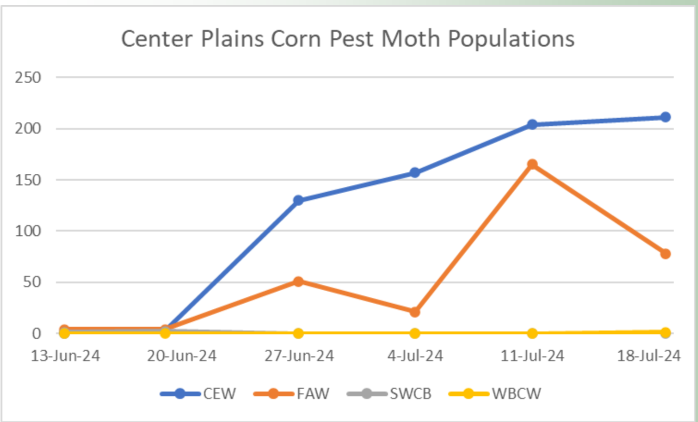
Our PPM corn ranged in stage from V3 through late blister with most older fields pollinating currently and the late fields all under V6. Pest were surprisingly quiet in our corn this week. We have pockets of Banks grass mite established in all of our post tassel corn, but they did not flare the way we feared they could have based on how they increased last week. In most fields, their numbers decreased with the arrival of a few mite specific predators, mostly predacious thrips, and a bit of humidity allowing some fungal diseases to impact the mite populations. In one corn field, the most mature, their numbers increased, but only marginally so hampered by the same factors. We are currently actively scouting for southwestern corn borer, fall armyworm, western bean cutworm, and mites but found no other pest aside from a moderate corn earworm egg lay starting. No larvae were found in the ear yet. While we do not officially consider earworms a field corn pest, as they typically only damage the tip of the ear versus the long control window, we should be watching this population for unexpected survival or higher than expected damage in Bt fields as a resistance monitoring need. For sweet corn, prophylactic treatments for corn entering green silk should be advised to prevent ear feeding.

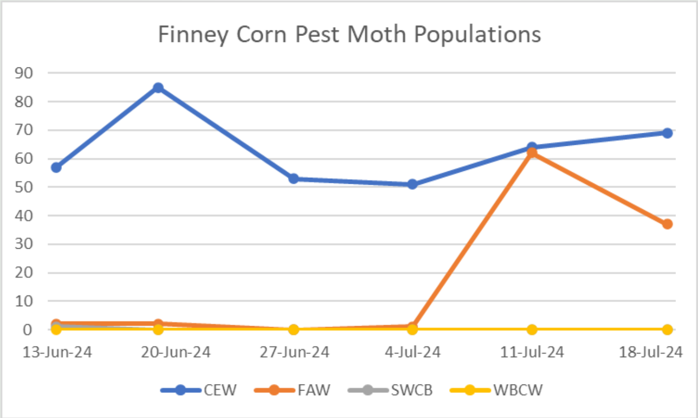
Small BGM colony at –3 leaf this week in N Hale.

The attached photo is confirmed LSD in SW Swisher County, just a few miles away from the Castro and Lamb County lines. This discoloration is very typical of LSD's early symptomology. Often it is interveinal , but not always, the light green discoloration is consistent and often splotchy

For corn diseases we have a new threat. For our standard diseases, we do not have much to report. We started noting some very light Southern rust starting in a few fields and some gray leaf spot in most fields, we did find early symptoms of a new disease I hope we do not become too familiar with. This would be **Late Season Decline, (LSD).** This is a fairly new bacterial disease discovered and/or identified by Dr. Ken Obasa, Extension and Research Pathology Specialist, Amarillo. It has the potential to be quite devastating if symptoms are widespread early in corn's development but can be hardly detectable if sparse and infecting late in development. Not much known about this LSD disease. Dr. Obasa is working feverishly with multiple researchers and field personnel to get answers but right now there is no known treatment or cure. It is strongly suspected and noted in corn north of Amarillo that once it is found in a field, that field will have a perpetual LSD situation. However, we did note this disease several years ago in one of our program fields to help ID it and have not seen it since, until this year. Our crop rotations in this region might be of aid but it is not even known how the disease is transmitted; it could also impact other crops. Dr. Obasa and Dr. Jose Santiago-Gonzalez, Extension Entomologist in Amarillo are trying to work these issues out. Hopefully by next spring we can develop an IPM plan to manage LSD and have some better answers at our local grower meetings for next year. In our field, we have less than 1% of the plants infested and the field is at green silk stage. Hopefully, this infection will not result in economic issues. To ultimately control it will likely take plant breeding resistance, which has not yet started nor traits needed for resistance identified. For now, we should be on the lookout for this disease's presence and severity. I am including Dr. Obasa's fact sheet about LSD at the back of this newsletter.







It is hard to see here, but we did have 1 western bean cutworm near Center Plains.

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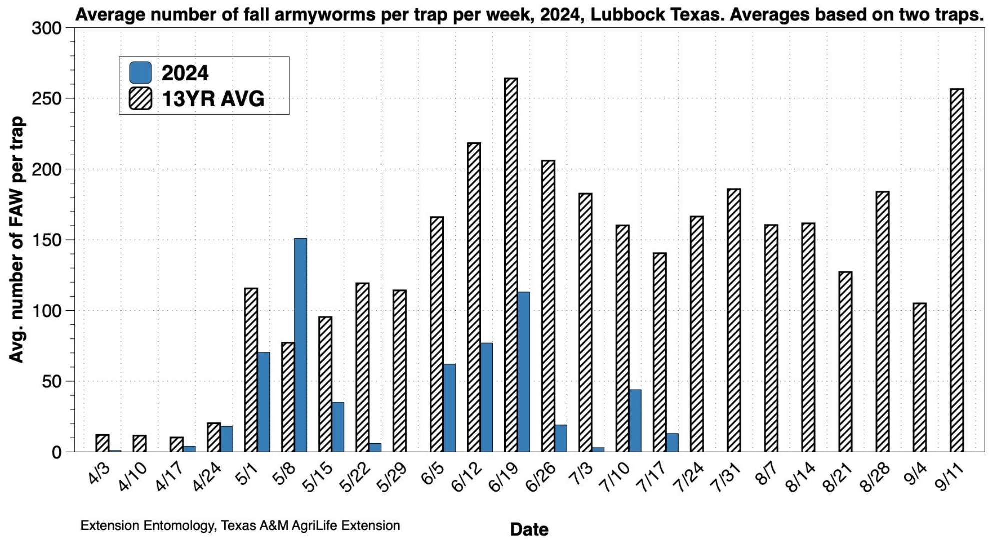

Blayne Reed

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TEXAS A&M AGRILIFE EXTENSION

PLPM-PU-107
February 2024

LATE-SEASON DECLINE DISEASE OF CORN

Ken Obasa*

INTRODUCTION

Corn (*Zea mays* L.) is the most important agricultural crop in the United States based on production volume. In Texas, fungi are the most common cause of corn diseases. However, during the 2021 cropping season, sudden, drought stress-like symptoms developed on previously green and healthy corn stands in a fungicide trial study at the Texas A&M AgriLife Experiment Station at Bushland, Texas (Fig. 1a). Investigations of symptomatic plants and subsequent diagnosis consistently found association of bacteria with symptomatic tissues. The identity of the recovered bacteria was determined on the basis of their respective 16S rRNA partial gene sequence as being very closely related to *Pantoea ananatis*. This bacterium was first identified and reported as a plant pathogen causing fruitlet rot of pineapple in the Philippines (Serrano, 1928). It has since been designated as an emerging pathogen because of its increasing numbers of previously unreported hosts, including as a pathogen of corn, Palea browning (or dark-brown leaf lesions) and stalk rot disease of rice (Cother et al., 2004), sudangrass leaf blotches and streaks (Azad et al., 2000), onion leaf blight, seed stalk rot, and bulb decay (Gitaitis & Gay, 1997), wheat brownish leaf lesion (Krawczyk et al., 2020), and tomato gray wall disease (Stall et al., 1969).

In corn, *P. ananatis* has been previously reported to cause necrotic or white leaf spots or streaks (Krawczyk et al., 2021) and stalk rot (Goszczynska et al., 2007). However, the symptoms observed on the affected corn in 2021 are distinct from those previously reported for this bacterium, as well as those of corn Stewart's wilt (Roper, 2011), caused by *Pantoea stewartii*, another closely related bacteria. Symptoms of Stewart's wilt include water-soaked, light-green lesions with necrotic centers, and wavy and chlorotic margins that run parallel to the leaf veins (Roper, 2011). Subsequent investigations confirmed this to be a new disease in corn and subsequently designated it as "Late-season Decline" (LSD) disease (Obasa et al., 2023). The disease has since rapidly spread in the Texas Panhandle and beyond, and by the 2022 growing season was confirmed in all 22 counties of the Texas Panhandle.

DISEASE SYMPTOMS

Early Phase

Infection of corn plants by this bacteria can occur at any stage of plant growth. When infection occurs during the vegetative growth stage, symptoms are visible only on the leaves. Foliar symptoms initially appear as light-green, elongated, slightly translucent, and non-chlorotic streak lesions with non-wavy margins (Fig. 1b). Under wet or humid conditions, such as after

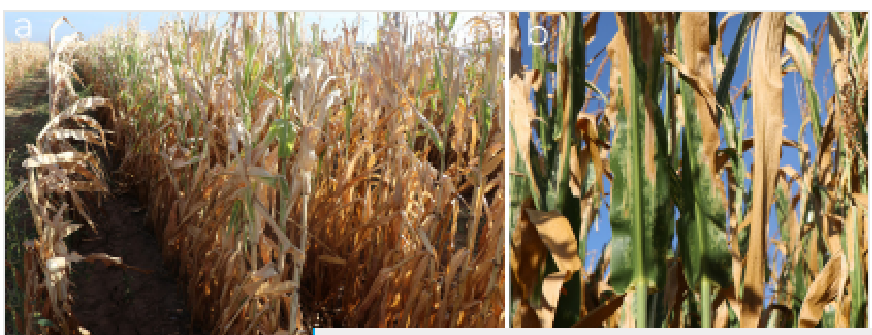

Figure 1. (a) Late-season decline disease of corn; (b) Foliar symptoms of late season decline disease on corn showing light-green, elongated, slightly translucent, and non-chlorotic streak lesions with non-wavy margins of the early phase of the disease.

*Plant Pathologist and AgriLife Research and Extension Specialist, Department of Plant Pathology and Microbiology, Texas A&M AgriLife Research and Extension Center rain or irrigation, water-soaked margins can be observed around the margins of the lesions. The foliar symptoms of the disease are distinct and fairly diagnostic. During this stage of infection, the disease typically does not result in stand decline or appearance that can alert to an ongoing issue of a disease. Additionally, infection during the vegetative growth stage may result in stunting of affected plants (Fig. 2) and generally delayed onset of tasseling. Because of the subtle nature of the symptoms associated with this phase of the disease, it usually goes unnoticed, unrecognized as a potential problem, misdiagnosed, or underestimated.

Figure 3. Stalk rot (a and b) and stalk rot-induced lodging of LSD-infected corn stands (c).

Late Phase

Later in the season, near the onset of the reproductive stage of growth (V7-VT), the incidence and severity of the symptoms increase significantly. During this time, the foliar lesions often enlarge, coalesce, and turn necrotic, resulting in leaf blight symptoms that, characteristically, progress from leaf tips toward the base of affected leaves (Fig. 1b). During this phase of symptom development, affected plants appear drought-stressed. As a result, this is often mistaken as the time when the affected plants became infected and the disease began. Stalk rot has also been associated with several instances of this disease, making affected plants predisposed to lodging (Fig. 3a-c).

Other symptoms observed on affected plants include tassel senescence, often resulting in impairment of pollen production, arrested ear development (Fig. 4a), and small or poorly developed corn ears with few or no kernels, which may also appear swollen (Fig. 4b).

YIELD IMPACT

Available data from affected fields in multiple counties indicate yield losses from this disease can range significantly depending on several factors. Importantly, the stage and vigor of plant growth at the time of infection, as well as prevailing environmental conditions, can significantly influence disease outcomes. Furthermore, the disease can result in yield loss through direct impact on ear and kernel development, or indirectly through lodging of affected plant stands. For instance, yield loss of 70 to 90 bushels/acre was reported from a commercial field in the Texas Panhandle in 2021 due to stalk rot-induced lodging from infection by the disease. Overall, depending on prevailing factors, yield loss from the disease can range from insignificant to over 90 percent. In some very severe cases, entire fields have been observed to be infected with little chance of survival following the onset of the late phase of the disease. It is important to note that other factors, such as the presence of other disease(s), pest infestations, and agronomic-related predisposing factors can exacerbate plant stress and also contribute to yield loss.


Figure 2. LSD-infected corn stands showing symptoms of stunting.

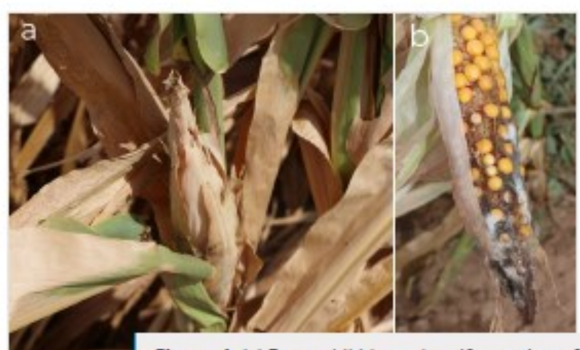

Figure 4. (a) Ear and (b) kernel malformation of LSD-infected corn plants.

MANAGEMENT

As with other bacterial diseases, genetic resistance is the best strategy and most economical for disease management. However, no source of resistance has been reported for late-season decline disease in corn. And because little is currently known about the disease epidemiology, and transmission and biology of the causative bacterial pathogen, there are currently no alternative management recommendations. Nevertheless, it is recommended that corn farmers enlist the services of a plant disease diagnostic laboratory to verify any suspected cases of infection by LSD. A disease diagnostic report, in the event of the occurrence of LSD infection, will empower a farmer in making timely and accurate decisions regarding the fate of an affected corn crop, which, depending on factors such as disease incidence level, severity, and the stage of development of affected plants, could range from either continuing to take the crop to maturity or cutting it for silage to minimize loss.

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