

GENERAL:

Cotton across the area is growing nicely and some of our earliest planted fields are in peak bloom, and the rain early last week was timely. Insect activity has remained low, but spider mites are starting to move into cotton as corn start drying down for harvest or being chopped for silage. Bollworm mot activity in area cotton fields have been increasing this week, and it looks like we could see a heavy egg lay on Sunday with the full moon. Corn is currently being chopped, while late planted corn is just finishing pollination. The recent rains has caused some new Northern Corn Leaf Blight lesions to develop, but due to our forecasted temperatures this disease has not and should not be an major issue. One corn disease we do need to keep an eye out for in our late planted corn is Southern rust, which is favored by warmer temperatures and is currently being found in corn around the College Station area.

CORN:

The early planted corn crop is at or close to physiological maturity and is about 10-14 day away from grain harvest starting. Fields are currently being chopped with respectable yield reports. The recent rains have caused the development of new Northern Corn Leaf Blight lesions, but this disease should not be a major concern for our late planted corn. The one disease we do need to keep an eye out for is Southern rust. This disease is not a common disease of corn in our area, but every now and then our conditions become favorable for the disease. It is currently being found in corn in the Brazos River bottoms around College Station. Southern rust differs from common rust which is not an economic disease of corn by the shape and color of the pustules as well as how the pustules are distributed across the leaf. Southern rust produces a pustule that is round and has an orange color (**Figure 1**). Common rust produces dark red, elongated pustules. Southern rust pustules are found mainly on the upper leaf surface, but can also be found on the stalks and husk, and pustules will be found in clusters on the leaf surface, where as common rust pustules are widely dispersed across the leaf surface. Southern rust infections start in the lower canopy and as the environment remains favorable, and with the help of rain the disease will spread up the plant. Tom Isakeit, Extension Plant Pathologist out of College Station has put together a great document that discusses how to identify southern rust from common rust and when to apply fungicides to avoid economic loss from southern rust. This document can be found here: https://agriflifecdn.tamu.edu/coastalbend/files/2017/05/Southern-Rust-of-Corn_2017.pdf.



Figure 1. Southern rust (left) and common rust (right) on corn in Texas. Photo Credit: Tom Isakeit

COTTON:

The area cotton crop is growing nicely and most fields in the area are now blooming with minimal issues. Bollworm moth numbers are increasing but did not see an increase in eggs until Friday morning. Spider mites are starting to move into area cotton fields from corn as fields are being chopper and older corn nears harvest. Some fields in the area are starting to show Potassium deficiencies as fields start to reach peak bloom. Bollworm moth activity has been slowly increasing over the last few weeks, but early this week moth trap catches increased. I currently have traps located in Chatt, Irene, and Itasca. On Tuesday and Wednesday night (6/30-7/2) I caught 89 moths in Chatt and 123 moths outside Itasca. This increase in moth activity is setting up for a heavy egg lay to occur over the week with the full moon occurring on the 5th of July. I have started seeing some eggs in area cotton fields, but the fields I am scouting have a good number of beneficials that when combined with our Bt technology and current environmental conditions we should not see major bollworm issues.

Spider mites are starting to move into area cotton fields over the last two weeks. The rain early last week slowed down the spider mites, but their development quickly bounced back once the warm dry conditions returned. Most of the fields with spider mite issues have corn bordering the field or nearby that is either being chopped for silage or is starting to dry down. Spider mites typically start infesting the field along fields edges and then move into the field, but the recent high winds have helped them move further into the field to start their infestation. Spider mite damage first appears as white to yellowish speckling of the upper leaf surface, and as the mite persists the leaf will develop a reddish appearance before turning brown and falling off the plant. The underside of the leaf will develop a silver appearance that will eventually turn necrotic where the spider mites have fed. If spider mite infestations are left untreated plants can quickly defoliate the plant prematurely. Cotton should be treated when 40% or more of the plants are showing feeding damage and the spider mite colonies are actively growing.



Figure 2. Reddish color of upper leaf caused by spider mites feeding on the underside of the leaf.



Figure 3. Spider mite colony on the underside of a cotton leaf with webbing.

Now that cotton fields across the area are reaching peak bloom and starting to set bolls, the plant is at its highest demand for Potassium (K) in the growing season. Over the last week I have started to see plants in multiple fields across the area with a few plants expressing Potassium deficiency symptoms. When in peak bloom the demand for K can be between 3 and 4 pounds of K per acre per day. Symptoms of K deficiency is interveinal chlorosis followed by a reddish discoloration (**Figure 3**) If plants are deficient in K, they will be more susceptible to disease, could defoliate prematurely, shed fruit (small bolls and squares), and fiber quality will be reduced.



Figure 3. Potassium deficiency symptoms in cotton

Soils in our area are typically not deficient in K, but there are a number of factors that can cause plants to become deficient, including soil moisture, root growth, K source in the soil, and fruit load on the plant(s). The amount of water or the lack thereof in the soil around the roots can limit the ability of the plant to bring up water, Potassium, and other nutrients. In waterlogged soil the oxygen concentration is reduced and reduces the ability of the root system to grow and take up nutrients. In dry soils the water becomes bound so tight that the water in the soil profile and any nutrients in the water solution are bound so tight to the clay particles that the plant is unable to absorb the water and nutrients present in the profile. Another reason we can see K deficiencies is an imbalance between the K supply and the demand for K in the plant. As a field starts to flower its demand for K is increasing and becomes highest around peak flowering where fields could take up as much as 4 pound of K per acre per day. This increase in demand for K is from the role K plays in boll filling and the fiber maturation process.

There are foliar fertilizer products that can be used as a K source, but most of these products will only apply about 3 pounds of K₂O when applying them at their maximum labeled rate. Even though you applied a 3 pounds of K₂O per acre using a foliar feed, does not mean that all 3 pounds will be taken up by the plants. Spray coverage, droplet size, use of wetter/stickers all have affect how much of the foliar fertilizer is taken up by the plants. Another factor affecting the uptake of K by the plants from a foliar fertilizer is the fact that when plants become deficient in K and as leaves age the leaves develop a thick waxy layer that can prevent the K₂O from entering the plants. Foliar products can be useful in fields that are showing deficiencies, however their application should be made as soon as the symptoms start appearing, but it is also important to remember that under a goo fruit load the demand for K could be as much as 4 pounds K per acre per day and if you apply the maximum rate and get 100 percent absorbed by the leaves you are only applying enough K for the plants for one day. The use of foliar K fertilizers should be used to provide enough K to the plants so they do not start shedding fruit before the conditions causing the K deficiency is corrected. The reason we are seeing these deficiencies in our cotton is two-fold, the first reason being the fruit load and the second being our drying soil conditions. Most of our area cotton fields have a great yield potential thanks to a low thrips and fleahopper pressure this year compared to years past. This has caused the plant to need more K than it can take up from the soil and have already stored in the plant. The second reason is the drying soil conditions have made it harder for the plant to uptake nutrients, and because of our wet soil conditions early in the season our root systems probably did not go down very deep where most of our soil moisture and plant available K is located now. The heavy fruit load and the rate at which these squares are being set when added with our drying soils has lead the plants to have a demand for more K that what the root system is able to absorb from the soil solution. At this point in the season they only thing we can do is make a foliar K application and hope our environmental conditions correct themselves quickly so they plant can take up what K is available in the soil and avoid multiple trips across the field. Once the growing season is complete soil sampling is the best way to assure your soils have adequate K concentrations and apply fertilizer to field(s) that need more Potassium.

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