February 5, 2020

Volume 3, Issue 1

Blacklands IPM Update

GENERAL:

Wheat across the regions looks good, and pest issues are currently minimal. Many producers in the region have utilized the recent drier weather to top dress and spray weeds. I have seen a few insects and diseases in fields across Hill County that we need to keep an eye on to make sure they do not get out of hand. I have not found leaf or stripe rust in wheat fields across Northern McLennan County and Hill County yet, but I have received reports of stripe in southern and western portions of McLennan County. The colder weather forecasted for next week will suppress the development of stripe rust across the area.,

DISEASE:

Disease issues are quite right now compared to the last couple of years. Currently I am picking up on low levels of powdery mildew around Abbott and Aquilla, and Septoria leaf blotch in wheat fields that are following wheat. I have received reports of strip rust being found in wheat around Temple and further south, and with the warmer temperatures this week I would suspect it will not be long before we start picking up locations in the Northern McLennan and Hill Counties area. As of right now there are not disease issues in any of the scouting program fields that require treatments, but we do need to continue to monitor disease progression in area wheat.

Powdery mildew is favored by mild temperature (59°-71°F), high relative humidity, and dense stands. Unlike our rust diseases powdery mildew does not need the leaf to be wet for an extended period for infection to occur but the dew in the canopy has driven canopy humidity up as the day progress. This disease affects yield by causing a reduction in the number of heads per acre, kernel size, and test weight. The earlier in the year powdery mildew infections occur the higher the potential there is to see an economic yield loss from the disease, which is why we need to keep an eye out and treat once the disease is becoming present throughout the field. Infections begin in the lower canopy where the humidity will be higher and the temperature lower than what weather stations are reading, and then move up the canopy if favorable growth conditions remain in place. Symptoms of powdery mildew is powdery white to gray fungal growth on leaves and stems (**Figure 1**). At first the fungal growth will have a white powdery appearance that will eventually change to a greyish brown color with time. On the opposite side of the leaf from the fungal growth the leaf tissue will appear yellow at first and then eventually turn to a tan to brown color as the fungus kills the cells in that region of the leaf. Management options for powdery mildew include planting varieties with resistance to powdery mildew, avoid excess Nitrogen being applied, and the use of fungicides. Texas A&M AgriLife Extension updates the varieties characteristics of common wheat varieties years and is published in the Texas Wheat Variety Trial Results (https://varietytesting.tamu.edu/files/wheat/2019/2019-Wheat-Publication-1030.pdf) and on the wheat resources page on the Hill County Texas A&M AgriLife Extension webpage (http://counties.agrilife.org/hill/files/2020/01/2020-TAMU-Wheat-Variety-Characteristics.pdf). Applying excess amounts of Nitrogen promotes tiller formation which leads to a dense canopy, and also increases the susceptibility of the crop to plant diseases. There are a number of fungicides on the market that will effectively manage powdery mildew, and their application should be made based on the presence and severity of powdery mildew in the field, if the variety is susceptible or resistant to powdery mildew, if the future weather conditions appear to be conducive for growth, and the market price should help in the fungicide selection.

Figure 1. Powdery mildew in wheat. Image on the left is of younger infections while the image on the right is from an older infection and has the black fruiting structures present.

Septoria leaf blotch is the other disease currently being found in the area. This disease in being found mainly in fields that are wheat behind wheat, where the disease survived the summer on infected wheat stubble. Symptoms start as small chlorotic spots, which can appear shortly after the plant emerges. As the disease progresses the lesions become a light tan, and will develop dark colored fruiting bodies inside the lesion. The shape of the lesion is typically long and narrow an constrained by leaf veins, but they can develop an irregular or elliptical shape. Diagnosing this disease in the the field is the dark colored fruiting bodies in the lesion. Favorable environmental conditions extended periods of leaf wetness, and temperatures between 50 and 68F. Management options include resistant varieties, cultural practices, and fungicides. There are wheat varieties with some level of resistance, however, of the common HRWW varieties planted in Texas there is only 4 with a published resistance rating. Cultural practices include rotation to a non-host crop an/or burying infected crop residue before plant the next crop. Fungicides can be utilized to manage Septoria leaf blotch, but should only be applied is the environmental conditions are favorable for disease progression and if the disease or complex of diseases is likely to cause an economic loss.

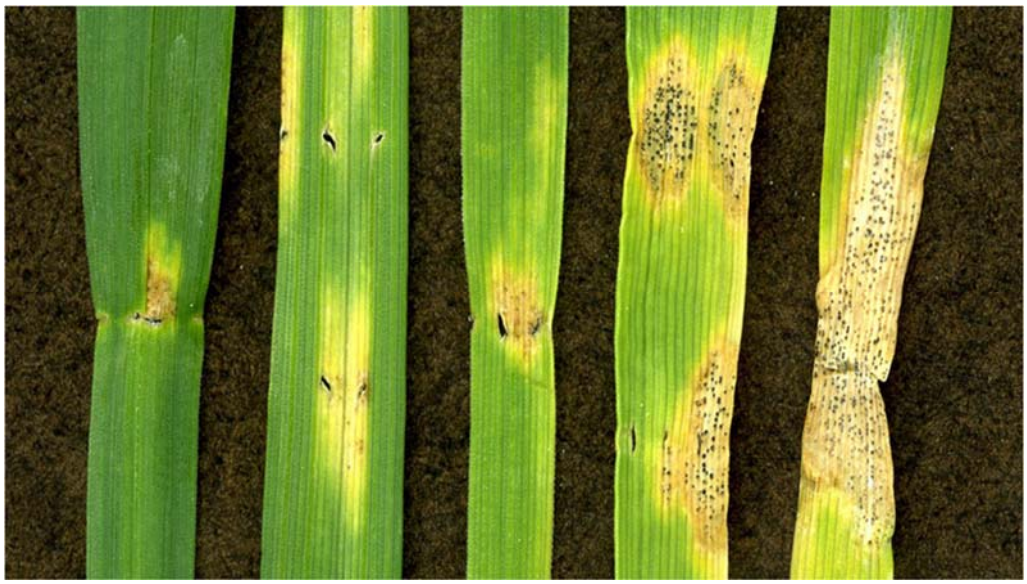

Figure 2. Septoria leaf blotch symptoms as lesions grow. Lesions on the left the start and progress as you move to the right with the development of the black fruiting bodies in the lesion. Photo credit: Ponomarenko et al. (2011).

INSECTS:

I have observed insect pest in all but three fields in the scouting program this week, but all are currently below what would justify treatment. Insect pest issues currently is less of an issue in wheat that is following corn or cotton, while the handful of fields we have that are wheat behind wheat are dealing with an insect pest issue that needs to be watched carefully. To date I have observed bird cherry oat aphids and winter grain mites infesting area wheat fields.

Bird cherry oat aphid numbers are present in a majority of the fields in the scouting program, but their population size is well below what would justify an insecticide application. This aphid can range in color from yellowish green, dark green, to black; and has a reddish orange area around the base of it's cornicles (**Figure 3**). This aphid is a known vector of the barley yellow dwarf virus, but I have not seen any symptoms that would suggest the virus has been transmitted. There is no established economic threshold for bird cherry oat aphid in Texas small grains, and it is recommended to follow the economic threshold from the University of Nebraska which is 20 aphids per tiller up to the boot stage, at which the economic threshold starts to decrease.

Figure 3. Bird cherry oat aphids in wheat. Photo credits: D. Tyler Mays (left) and Adam Sisson, Iowa State University, Bugwood.org

The greenbug has also been found in a couple of wheat fields along the county line between Abbott and West, and I have heard of reports of them in more fields. Currently they are at a level well below what would justify applying insecticides. The greenbug is pale green in color with a darker green streak down the back of the insect (**Figure 4**), and is only about 1/16 of an inch in size. This aphid species does inject a toxin into the plant while feeding, and this toxin causes the leaves to become yellow and later die, or plant to become infected with viruses like barely yellow dwarf virus. Population growth of the greenbug is favored by temperatures between 55F and 95F. The ability of this aphids to damage the plan with its toxin and acting as a vector for Barley Yellow Dwarf makes this insect a potential economic pest. There is an established economic threshold for greenbug in wheat and other small grains and is based on plant height and the number greenbug per linear foot (**Table 1**). Management options for greenbug include preserving beneficial insects, host plant resistance, and insecticide applications. Host plant resistance does exist, but most of the Hard Red Winter Wheat varieties commonly planted in Texas do no have a published resistance rating on the Texas A&M AgriLife Extension Wheat Variety Characteristics sheet. There are numerous insecticide options for greenbug management in wheat and include chlorpyrifos, premixes of chlorpyrifos and a pyrethroid, pyrethroids alone, dimethoate, and malathion.

Table 1. Texas A&M AgriLife Extension Service Greenbug Threshold

Plant Height (inches)	Number greenbugs per linear foot
3-6	100-300
4-8	200-400
6-16	300-800

Figure 4. Greenbug feeding on wheat leaf. Photo credit: Frank Peairs, Colorado State University, Bugwood.org

The winter grain mite is present in a handful of fields in the scouting program that are wheat following wheat or another small grain crop. This mite pest feeds on barley, oat, and wheat; and ranges in size from 1/32 to 1/16 of an inch. They have a black body with a single reddish orange spot on their back, while their legs and head are reddish-orange (**Figure 5**). They feed on the contents of leaf cells causing the leaf tips to turn brown, plant to become stunted and develop a silvery gray appearance. The winter grain mite tries to avoid light and will typically feed on the plant during the night and on overcast days, and hideout around the base of the plants during sunny days. They are easiest to spot in the field when they are walking on along the soil surface where the reddish orange legs and head stand out. Hot and dry weather reduces their activity. There is no established economic threshold for winter grain mite in Texas, but the presence of both the mite and visual feeding damage warrants treatment to avoid economic losses. There are not insecticide or miticides labeled for control of winter grain mite in wheat, but you can use insecticides under 2ee regulations, but the applicator assumes all liability with the application.

Figure 5. Winter grain mite on wheat leaf. Photo credit: University of Nebraska Department of Entomology.

Blacklands IPM Update is a publication of Texas A&M AgriLife Extension IPM Program in Hill & McLennan Counties.

Authors:
Tyler Mays, Extension Agent-IPM Hill & McLennan Counties
Zach Davis, County Extension Agent-AG/NR

126 South Covington Street
P.O. Box 318
Hillsboro, Texas 76645
Phone: 254-582-4022
Fax: 254-582-4021
Mobile: 979-482-0111
Email:Tyler.mays@ag.tamu.edu