Blacklands IPM Update

GENERAL:

The area wheat crop is progressing nicely with most of the fields in the scouting program past the jointing stage. Bird cherry oat aphids are still being found in wheat fields with most of them at populations well below the economic threshold. Stripe rust in present in a few fields around both Malone and West, and tan spot is being found in some area fields that are either wheat behind wheat or have high amounts of crop residue on the soil surface. Soil temperatures and moisture conditions finally allowed for corn planting to start the latter part of last week ahead of the rain we received yesterday (3/4). A lot of producers were able to make good headway in the number of acres planted and this rain should help get the crop up and off to a good start.

WHEAT:

Wheat in the area is jointing or just past the jointing stage and growing good. If weather conditions remain favorable, we could start seeing flag leaves in about two weeks. This growing season has been much quitter than last year as up until this past Friday stripe rust and/or leaf rust were not present in any of the fields and aphid numbers remained well below the economic threshold. Bird cherry oat aphids are still present in area wheat fields, and in most of them are not a concern, but in a few fields their number have increased close to the economic threshold and symptoms of Barley Yellow Dwarf Virus are becoming evident. Currently the economic threshold for bird cherry oat aphids is 20 per tiller until the boot stage where the threshold will drop to 10 per tiller, however, the presence of barley yellow dwarf virus symptoms and the aphid may justify an insecticide application to minimize the spread of the virus across the rest of the field. There are beneficial insects around these aphid colonies and should help keep the bird cherry oat aphid population in check. Continue monitoring their numbers and for symptoms of barley yellow dwarf virus and treat the aphids when justified

Barley yellow dwarf virus is transmitted by more than 20 different aphid species, with the most important species being the bird cherry oat aphid, corn leaf aphid, English grain aphid, and the green bug. This virus is moved in the field and to new field through the migration of winged aphids which can move small distances on their own of use wind currents to move long distances. Symptoms of barley yellow dwarf typically to not become noticeable until about two weeks after the infection and they do not become obvious until the plant reaches the jointing stage of crop development. This disease can easily be mistaken four wheat streak mosaic, root and crown diseases and abiotic factors like nutrient deficiencies and environmental stress. Symptoms cause by this disease include leaf discoloration than changes the leaf to yellow, red or purple that starts at either the leaf tip and works down the leaf or starts on the leaf margins and works in toward the midrib (**Figure 1**). Additionally, this virus will cause the infected plants to become stunted and may be first noticeable in small patches randomly throughout the field. The presence of the disease can be tentatively diagnosed based on the presence of an aphid vector and yellow stunted plants grouped singly or in small patches. The development of these symptoms is favored by bright sunny weather. Barley yellow dwarf virus can be managed through genetic resistance, cultural practices, and chemical or biological control. Genetic control is by planting varieties that have some level or tolerance to the virus. There are not many commercial varieties that have a high level of resistance or tolerance to this virus, but some varieties are less susceptible to the virus. Weed control in and around the field is one cultural practice that can be used to minimize the risk of barley yellow dwarf. By controlling grassy weeds and volunteer cereals bot in and around the field will eliminate the host plants that both the aphid vector and the virus can survive on. Breaking the green bridge for at least 4 weeks prior to planting can eliminate the risk of an early season infection as both the virus and vector will not be able to survive in the field. Biological and chemical control is done by managing the aphid vector. Biological control can be effective, but sometimes these parasites and predators are unable to keep up the with aphid's reproduction rate. Chemical control is effective at controlling the aphid vector, but fields needs to continue to be monitored after the application as the field can be reinfested with the vector form wild host plants and other nearby wheat fields. Currently barley yellow dwarf is present in some fields in the scouting program at low levels and the bird cherry oat aphid numbers and the virus are being closely monitored so a treatment can be made before this disease moves to other parts of the field.

Figure 1. Leaf discoloration caused the barley yellow dwarf virus in wheat. Photo credit: Stephen Wegulo, University of Nebraska-Lincoln Extension Service.

Stripe rust (**Figure 2**) has been found in a field in the vicinity of Malone and I have received reports of it being found in wheat around West earlier this week. Looking at the 10-day forecast, and the amount of rain received today (3/4) the weather conditions will be favorable for the development of strip rust infections in the area. It is important to know your variety's resistance to stripe rust, as this can help in deciding if a fungicide application is need. Varieties that are susceptible or moderately susceptible may benefit from a fungicide application in the coming days to prevent build of spores in the field that can then infect the flag leaf when it emerges, while varieties that are resistant or moderately resistant may not need a fungicide as their resistance genes should be able to prevent the development of stripe rust infections. It is important to keep the top two leaves as disease free as possible as over 75% of the energy used to fill kernels is produced in these leaves.

Figure 2. Stripe rust pustules on wheat leaf. Photo Credit: David Drake, Texas A&M AgriLife Extension Service

The disease tan spot has been found in a few fields in the scouting program that are either wheat behind wheat or have heavy crop residue on the soil surface. Tan spot in other wheat productions regions has been a major disease of winter wheat with yield loss estimates as high as 50 percent in some cases (http://extensionpublications.unl.edu/assets/pdf/g429.pdf). Infection can occur at any point in the growing season but is most damaging during the boot to dough growth stages. The disease first appears as small tan to brown spots that are diamond to lens shaped. Typical symptoms are tan lesions, usually with a dark brown spot in the middle and outlined by a yellow border. As the disease progress these lesions may grow together and form larger areas of dead tissue that ma be irregular in shape. Tan spot first infects the lower leaves that are near or in contact with the soil surface, and then progresses up the plant. This disease is favored by rainy, misty, or foggy weather, and the lesions will release new spores during every wet period. Management options for tan spot include crop rotation, tillage or some way to facilitate the breakdown of crop residue, variety resistance, and fungicides to stop a current infection and prevent any new infections from occurring. The rain we had yesterday was a favorable environment for the release of new spores and within 5 to 7 days we could start seeing new lesions forming. The weather forecast also looks favorable for the continual growth and development of tan spot, and should be monitored closely to avoid infection on the upper two leaves of the plant.

Figure 3. Tan spot on wheat, note the tan to dark brown lesions bordered by a yellow halo. Photo credits: Oklahoma State University (left) and Stephen Wegulo, University of Nebraska Lincoln Extension Service.

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