BLACKLANDS IPM UPDATE

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GENERAL:

We are finally getting a weather pattern in the area that should help dry out our soil so we can get in and top dress our wheat, and start planting corn. With this warmer weather our wheat has finally broke dormancy and some area fields, especially in the Southern portions of McLennan County have started to joint or are close to jointing. Disease activity in the region is starting to increase across the region, and scouting operations should start ASAP for stripe rust. I have received reports of stripe rust being present in a wheat field near Rosebud late last week, and earlier this week I found some stripe rust just north of Abbott. With our current weather pattern, and the strong southerly winds we could see stripe rust showing up across the Blacklands shortly. Insect activity has also increased over the last 7-10 days, as I have observed bird cherry oat aphids becoming more common across the area while walking fields. True armyworm moths are also present in area fields, and they could soon become issues for some area wheat fields. Over the next 7-14 days we need to 1) make sure we have applied enough Nitrogen to meet our yield goal and understanding with all the rain we have received this year we likely have lost some to leaching and volatilization, 2) make sure we are not having stripe rust increasing in our field(s), and 3) check to ensure that true armyworm are not cause excessive damage

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INSECTS:

Insect activity in area wheat fields over the last 7-10 days, mainly with an increase in true armyworm. There does to be some increase in the bird cherry oat aphid populations, but in the fields, I am checking they are still below the ~15 bird cherry oat aphids per tiller that would justify an insecticide application. Going forward we need to keep an eye on bird cherry oat aphid populations and for true armyworms to become an issue soon. Thankfully, this warmer weather pattern is starting to create an environment in the wheat canopy that will favor beneficial insects, which will help keep our aphid pests in check.

True armyworm moth activity in area wheat fields is starting to pick up across the area, but at this time I have not found any larvae in the field. They can be a significant pest of wheat and other small grain crops, especially if they go unmanaged and start feeding on the flag and flag minus1 leaf. When fully grown the true armyworm larvae will be roughly 1-1/2 inches long, with a green to brown body that has lighter stripes running the length of the body (**Figure 1**). The head capsule of the true armyworm does not have the white inverted "Y" like the fall armyworm but is a light brown color with a series narrow line that gives the head a net like appearance. They are nocturnal and will hide near the base of the plants or under crop debris on the soil surface during the day, and then move up the canopy during the night or periods of cloudy weather. Early signs of feeding will be the presence of windowpanes like damage to the lower leaves, and as the larvae age they will start consuming the entire leaf. As the true armyworms defoliate the lower canopy, they will move up the canopy to feed on more leaves but have also been known to clip awn and heads off the plant. Insecticide applications for true armyworm is recommended with there are 4-5 true armyworm larvae per square foot with extensive defoliation in the lower canopy. Ideally, insecticide applications would be made prior to any feeding damage occurring on the top 2-3 leaves of the plant. Insecticide options wise we have several insecticides including multiple pyrethroid active ingredients, chlorantraniliprole, malathion, insect growth regulators like Radiant SC and Blackhawk, as well as multiple formulations of Bacillus thuringiensis sprays. Malathion and pyrethroids will be the most used insecticides if we need to treat for true armyworm, but if we do make these applications, we need to be cognizant of the product's pre-harvest interval. Malathion carries a pre harvest interval of grain of 7 days, while most of our pyrethroids have a preharvest interval of 30 days. If we keep getting period rains, and/or dewy weather it may be worth looking into an application of a chlorantraniliprole product like Vantacor, Shenzi, or Besiege. While the price may be a bit of a shock, the chlorantraniliprole active ingredient is translaminar and will be protected from being washed off the leaf surface and can provide extended periods of residual activity.

Figure 1. True armyworm larvae. Photo credit: John Capinera, University of Florida.

DISEASES:

The rain that we have received this year, and the warming temperatures are creating a favorable environment for various diseases including stripe rust. I am still seeing some leaf blotch disease like septoria, stagnospora, and tan spot but these diseases typically do not have a major impact on our wheat crops because of our normal weather conditions later in the growing season. The main concerns right now disease wise are stripe rust and powdery mildew which both require mild temperatures and high humidity to infect the plant. I have heard of or seen stripe rust in two parts of the Blacklands, including Rosebud, TX and Abbott, TX; and it is likely there are more fields across the area that are starting to see stripe rust infections.

Figure 2. Stripe rust pustules forming on the upper leaf surface of wheat.

Stripe rust is favored by temperatures between 50°F and 64°F and requires extended periods of leaf wetness for infection to occur. Stripe rust pustules are elongated in shape and form stripes running parallel to the leaf veins on the upper leaf surface. The pustules can vary in color from yellowish to a light orange color (**Figure 2**). The pathogen can cause significant yield losses depending on the crop's growth stage at the time of infection and the varieties level of susceptibility (**Table 1**). Two management options are available for managing stripe rust which includes planting a resistant variety, and the use of foliar fungicide applications. Resistant varieties are an effective management option for stripe rust and other diseases and insects. Although resistant varieties are effective, these resistant genes can lose efficacy due to genetic shifts in the stripe rust fungi. It is also important to know that there are two types of host plant resistance to rust including All Stage Resistance (ASR), and Adult Plant Resistance (APR). When a variety has ASR resistance genes the plant is resistant to the pathogen at all growth stages. Varieties with APR resistance genes only are resistance after about the time starts jointing. In most of our hard and soft red winter wheat varieties we grow here in Central Texas the host plant resistance mechanism is generally APR, and only effective one the temperatures have started to warm up and the plants have started tillering. This is why we can often times see stripe rust early in the season in varieties that are labeled as resistant. Fungicides are also a very effective management option to reduce the impact stripe rust has on yields. They should be applied only when the weather conditions are favorable for disease development and there is stripe rust active in you area or there is a potential for wind blown spores to cause disease in your field(s). Fungicide application may not be warranted early in the season, because the main goal is to prevent the top 2-3 leaves of the plant from being infected, and if fungicides are applied too early in the season you may need 2 or 3 more applications to prevent infection on the flag leaf.

Table 1. Yield potential from stripe rust based on growth stage of wheat and host susceptibility

Start of Epidemic	**Percent crop loss based on host susceptibility**			
	Susceptible	Moderately Susceptible	Moderately Resistant	Resistant
First Node (Feekes 6)	85	75	55	25
Flag leaf (Feekes 9)	75	45	15	5
Mid-boot (Feekes 10)	65	25	7	2
Awns visible (Feeke 10.1)	50	10	3	1
Mid heading (10.3)	40	5	2	0
Mid-flowering (Feekes 10.5.2)	12	2	1	0

Modified from Gordon Murray, NSW DPI, Wagg Wagga New South Wales, Australia