

GENERAL:

Timely rains are occurring to help build our soil moisture profile as corn planting is quickly approaching, and wheat is starting to break dormancy. Wheat is in good to excellent conditions as the leaf sheaths are starting to lengthen in some fields (Feekes Growth Stage 4). There is still nothing major going on in the wheat fields signed up in the scouting program but as we continue to move into spring disease and insect issues could arise at any time. Soil temperatures over the last week and a half have been a roller coaster, averaging near 60 °F on February 4th to 42 °F the 6th of February and back to almost 60 °F on the 9th of February. The soil temperatures over night and in the mornings however have been dropping into the lower 50 and upper 40 depending on location and topography.

WHEAT:

The recent warm weather has led to good growth in our area wheat crop. This week I did start finding small colonies of bird cherry oat aphids (**Figure 1**) before the rain moved into the area. In a few of these fields where the aphids were present, I was also finding a few predatory insects, so along with the rains and the forecasted cooler temperatures should keep these aphid populations under control. Currently these aphid populations are extremely low with fields averaging 10-15 bird cherry oat aphids per linear foot, which is well below the economic threshold of 20 per tiller from the University of Nebraska talked about in the previous newsletter.



Figure 1. Bird-cherry oat aphids, note the overall dark green appearance with reddish brown on the back at the base of the cornicles. Photo credit: Adam Sisson, Iowa State University, Bugwood.org

I still have not observed any diseases developing in any of the fields in the scouting program. The past few weeks while scouting I have noticed that the lower canopy of the wheat crop would stay damp with dew late into the afternoon, and with the rains we received this week the weather conditions are conducive for disease development if spores are present. Current reports indicate that only leaf rust is active in the lower Rio Grade River Valley and South Texas around Kingsville. I have not heard of any reports of leaf or stripe rust in wheat north of these locations, so we still have maybe two weeks before we start seeing the disease moving into this area. As we continue to move into the spring and our temperature start rising we need to keep an eye out for stripe rust which is favored by temperature between 50 - 64 °F, leaf rust which develops at temperatures between 60 - 80 °F, and powdery mildew which is favored by dense stands/canopies, excessive nitrogen applications and temperatures between 59 – 71 °F.

CORN:

Here we are in the middle of February and corn planting for Hill and McLennan County will be here before we know it. Thanks to the arctic blast last week and the cold front that moved in earlier this week our soil temperature in the top four inches have dropped to slightly below to right at 50 °F over the last few days. I have seen reports that a few fields of corn had been planted late last week around Taylor and Temple area. Soil temperatures in Hillsboro on the morning of February 11th was around 47 °F with the 5-day average hovering just above 50 °F (**Table 1**). Corn should be planted into soil that is at least 50 °F or will reach that shortly. Under optimum conditions, adequate soil moisture, soil temperatures greater than 50 °F it takes roughly 115 growing degree days for corn to emerge which is why it is also important to plant only when the weather forecast is favorable for growth, as the longer it takes the seed to emerge the greater the chance for seedling death from seedling disease and insects.

Table 1. Four inch soil temperature for Hillsboro, Texas

| Date | Daily Average | 5-Year Avg. | 10-Year Avg. |
|--------|---------------|-------------|--------------|
| 1-Feb | 48°F | 54°F | 53.1°F |
| 2-Feb | 53 | 53.4 | 49.4 |
| 3-Feb | 58 | 52.6 | 49.2 |
| 4-Feb | 59 | 54.2 | 50.8 |
| 5-Feb | 44 | 50.6 | 47.4 |
| 6-Feb | 42 | 52.4 | 48.3 |
| 7-Feb | 46 | 50.6 | 48.9 |
| 8-Feb | 51 | 47.6 | 47.9 |
| 9-Feb | 59 | 49.2 | 48.6 |
| 10-Feb | 54 | 49.6 | 48.6 |
| 11-Feb | 46 | 50.2 | 47.3 |

Planting corn into cold soils (less than 50 °F) can lead to a few issues that will have negatively impact stand establishment and crop yield. The first issue is that under cooler soil temperatures it will take longer for corn seedlings to emerge, this will lead to a greater risk for seedling mortality from either disease or insects depending on the seed treatment, and poor uniformity in emergence. Uniform emergence in corn is key as late emerged corn seedlings are unable to catch up to their earlier emerging neighbors which will out compete the late emerging neighbors for water, nutrients, and light interception that is key for carbohydrate production and subsequent plant growth. The second issue that can arise from planting corn in cold soils is imbibitional injury, which occurs when the seed absorbs water from the soil profile that is colder than 50 °F, and the colder the water in the soil the soil profile the greater the risk for the damage to occur. Imbibitional injury is caused when the cold water is brought into the seed it causes the cell membranes of the cells to rupture and the contents of the cells to leak out, this can lead to loss of seed viability or the rupturing of the cell membranes can also predispose the plant to seedling disease infections that could lead to pre-mature or post-mature damping off. Seeds that do survive imbibitional injury may produce seedlings that are stunted, have distorted leaves, develop slower than normal, and some may produce a radicle (seedling root) but not a coleoptile (seedling leaf). In all if the soil temperature is not optimal it is probably best for production to wait a few days for the soil temperatures to reach a minimum of 50 °F before planting to ensure quick uniform emergence of the corn crop that get off to a clean healthy start.

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