



Blacklands IPM Update



GENERAL:

More normal temperatures have returned to the area after about 8 days of subfreezing weather. The arctic blast dropped temperatures to as low as -2°F in some parts of Hill County, which has damaged some of the areas small grain crops. It is still too early to tell how severe the freeze damage is, but as I looked at wheat fields on Monday and Tuesday it appears the damage is more cosmetic. The low temperatures had little to no effect on the aphid populations but did halt disease development.

FREEZE DAMAGE:

Winter grain crops are cold hardy during their vegetative growth stages with wheat being the most tolerant and oat being the most sensitive. Wheat in the scouting program before the winter storm ranged from Feekes Growth Stage 4 (lengthening of leaf sheaths) to Feekes GS5 (leaf sheaths strongly erect), with the growing point still below the soil surface. Wheat is most sensitive to freezing temperatures during the reproductive growth stages (Feekes GS6-Feekes GS11.3). The extended period of subfreezing temperatures has caused some damage to the crop, but from the fields I have looked at this week it appears more severe than it may be. I have looked at a few fields in the scouting program so far this week and from the turn row fields appear rough, but once you get out in the field and start looking at the crown and slicing stems to look at the growing points there does not appear to be a lot of damage. It is still a little too soon to be assessing freeze damage, and only time will tell how bad the arctic blast damaged our wheat crop.

Assessment of freeze damage to small grains should be delayed for about 7-10 days after the last freeze event so wheat has the chance to respond the warmer temperatures and try to grow. In wheat that has not jointed freeze damage can be fields having a blueish-green appearance, chlorotic leaves, and burnt leaf tips. Freeze damage to wheat during the tillering growth stages can have a slight to moderate affect on the crops yield potential. At the jointing stage (Feekes GS6) freeze damage shows up as yellowing or burning of leaves and leaf tips, lesion and splitting of the lower stems, and dead growing points. Freeze damage to wheat at the Feekes GS6 can have a moderate to severe impact on the crops yield. To assess freeze damage, collect a sample of plants from 4 or 5 different regions of the field and split stems and inspect the health of the plants growing point. A healthy growing point will be yellowish green to white in color, while a damaged growing point will be brown (**Figure 1**). To get an estimate on yield loss calculate the percent damaged growing points out of all the growing points inspected. Wheat does have the ability to compensate for freeze damage at this time by setting new tillers, and therefore assessing potential yield loss based on the percent of dead growing points can often overestimate the actual amount of yield loss.

There are a few things that helped our wheat survive this arctic blast with minimal injury. The first is the crops growth stage. Our crop before this arctic weather hit was at a growth stage where the growing point was below the soil and protected from adverse air temperatures. The second factor was that it snowed before we dropped to our lowest temperatures. The snow/ice cover acted as an insulator and helped keep the temperatures around the crown of the plant warmer than the actual measured air temperatures. The third factor that helped our crop make it through the Alaskan weather event was that our fields were adequately fertilized and was not moisture stressed. Plants that are healthy can withstand subfreezing temperatures better than plants that are poorly fertilized, or moisture stressed. The warm weather we are forecasted after this arctic blast is also beneficial, as it is excellent for wheat growth, and even has some rain in the forecast.



Figure 1. Wheat growing point on Monday 22nd of February. The growing point on left is damaged, while the growing point on the right is healthy.

WHEAT PEST:

While the freezing weather may have damaged our wheat crop, it had a minimal impact on the bird cherry oat aphid population. The snow cover that helped to minimize the amount of freeze damage to the crop by acting as an insulator helped keep the micro-climate around the crown of the plant at a temperature that would not kill the aphids. Additionally, during cold weather these aphids can be found in the soil seeking warmth. The beneficial insect population we had in front of the winter storm were wiped out by the freezing temperatures. As the temperatures warm back up it should not take long for beneficial insects to return to area fields and help manage our pest. At this time aphid numbers are still below what would warrant an insecticide application, and we also need to see the extent of the damage caused by the freezing weather before we invest money into the application of an insecticide.

Diseases in wheat were halted by the winter storm. However, the damage to the plant from the freeze will stress the plant and may make the crop more susceptible to some secondary diseases like crown rots and Alternaria leaf blight. At this time, I have not heard any reports of leaf rust or stripe rust near our area but looking at the weather forecast we could see stripe rust moving into the area in the next two weeks.

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