

Winterkill of Wheat

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Record cold temperatures during the first week of February, coupled with drought conditions in the area, potentially may lead to winterkill of wheat in some fields. Winterkill is not the same thing as freeze damage that we occasionally experience in March and April after wheat has broken dormancy and has entered the reproduction stage of development (jointing). Winterkill occurs when the crown of dormant wheat is damaged by freezing conditions. It is very unusual for the Texas Panhandle to have true winterkill in wheat. Typically wheat becomes vulnerable to winterkill when temperatures get into the single digits for a significant period of time. As of 3:00 PM Wednesday, the Panhandle region has not had air temperatures above 10 F since Monday night, and temperatures are not expected to rise above freezing until sometime Friday.

Wheat that will be most susceptible to winterkill will be dryland wheat with little tillering and with poorly developed root systems. Typically this will be later planted wheat. The dry soil conditions may increase the risk. Soil moisture tends to provide a buffer against cold temperatures around the crown of the plant. Wheat planted under clean tillage conditions will also be at more risk since there will be little crop residue to help insulate the soil.

The lack of snow cover, along with the dry soil conditions, is what is potentially putting the wheat crop at risk as a result of these record low temperatures. Even an inch of snow will have some insulation benefits to wheat.

Assessing winterkill damage will not be easy in the short term. Initially we are likely to see desiccated leaves. This will cause the wheat to look very bad, but does not necessarily mean the crown is damaged. If the crown is not damaged, the wheat will grow back. We will likely need at least a week of warm temperatures before the wheat crowns can be examined for damage. Dr. Jim Shroyer, Extension Wheat Specialist from Kansas State University made the following comments concerning assessing wheat winterkill in the December 2008 Issue of the Central Plains addition of The Wheat Farmer/Row Crop Farmer publication:

To test for winterkill damage, you can dig up a few plants, put them in pots, and bring them inside to warm up, Shroyer says. If the plants do not respond to the warmer conditions, they may have suffered winterkill injury.

“If plants are killed outright, they won’t green up. But if they are only damaged, it might take them a while to die. They will green up and then slowly go “backwards” and eventually die.

There are enough nutrients in the crown to allow the plants to green up, but the winter injury causes vascular damage so that the nutrients that are left cannot move, or root rot diseases move in and kill the plants. This slow death is probably the most common result of winter injury on wheat," he says.

Direct cold injury is not the only source of winter injury, Shroyer adds. Under dry conditions, wheat plants may suffer from desiccation. This can kill or weaken plants, and is actually a more common problem than direct cold injury.

From Dr. Shroyer's comments above it should be evident that it is going to take some time to truly know the effects of the cold temperatures on this year's wheat crop. As always, never give up too quickly on wheat. We really do not know if, or how much, wheat winterkill has or will occur in the Texas Panhandle. Wheat varieties we grow here are typically very winter-hardy. This will certainly be a good opportunity to evaluate some of our newer varieties for winter-hardiness. Probably the more critical problem we are having is the on-going drought. If we can get precipitation fairly soon, and spring weather is favorable, the Panhandle as a whole could still have a decent wheat crop.

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