Personal Column

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By Sandra L. Wick
K-State Research and Extension-Post Rock Extension District
Crop Production Agent

How have the cold temperatures affected the wheat?

Mother nature has really been giving us some significant fluctuations in temperatures and conditions for the 2020 wheat crop. Stay tuned and I will give you some guidelines to use when evaluating your wheat.

We have had several pretty low temperature events reported in the last couple of weeks around north central Kansas. The K-State Research and Extension Mesonet weather stations in NC Kansas in Jewell, Mitchell, Osborne and Republic counties recorded temperatures as low as 16 degrees F., but the ranges were from 16 degrees F. to 28 degrees F. Low temperatures aren't an uncommon occurrence in the spring to wheat in Kansas and it has certainly been subjected to different weather conditions during much of its growth period.

So could there be any damage to the wheat? Well, there are several factors that go into this answer, but the two most important components include the growth stage of the wheat and the air temperature including the degree and the duration. Other factors that can affect the potential for damage are the crop condition and soil moisture. Generally, if the topsoil is moist, it helps limit temperature changes keeping the soil at a more constant temperature. We were fortunate that our moisture levels were pretty good for this year. If there is significant top growth, that can also help insulate the vulnerable growing point of the wheat plant.

The southern part of our Post Rock Extension District does have some wheat that is "jointed" or at the first node above the ground also called the Feekes 6 stage while other areas of NC are still in the late tillering stage due to the late planting after soybeans. There is little or no difference in susceptibility among wheat varieties at the same growth stage. However, the further along the wheat is, the higher risk of injury to that wheat.

There are different temperatures that can cause damage depending on the **plant growth stage** of the wheat crop. So at the "**tillering"** stage, wheat can handle temperatures as low as about 12 degrees F. for about 2 consecutive hours while the **"jointed"** wheat can handle temperatures only as low as about 24 degrees F. for at least 2 consecutive hours. So with this information, it appears that for the majority of the wheat, there should be minimal damage, but we will have to see once it warms up.

It can be most severe along rivers, in valleys or low areas in fields where the cold air tends to settle. While the air temperature may drop for several hours, the actual “microclimate” of the crop may be several degrees warmer and create a "cushion" of protection to help moderate temperature swings. If the wheat plants have particularly “lush” growth, more injury can also occur.

Symptoms may include twisted, light green to yellow leaves and can appear “burned” on the leaves within one or two days after freezing along with a strong odor of dehydrating vegetation or a “silage” smell with a discoloration or bluish coloring, but the most serious injury may occur to the growing point of the wheat plant. The top growth of the wheat plant can also be more brown than just the tips and lying flat on the ground.

The many factors mentioned previously influencing freeze injury to wheat — plant growth stage, degree/duration of exposure and plant/soil moisture— often make it difficult to predict the extent of injury too quickly so it may take a little while to fully determine if any injury has occurred. This is further complicated by differences in elevation and topography among wheat fields and between the fields. We have seen some of the effects of the cold temperatures which usually shows up fairly quickly once the temperatures warm back up following the cold snap. The **fully** extent of the potential injury to the wheat generally cannot be determined until about 10-14 days after the cold temperatures and if it warms up again. As you know we had several incidences with low temperatures and not just a one-time event. The key is not get in a big hurry to evaluate your wheat crop; it may take several days for any injury to appear.

Once it warms up, you can simply pull some wheat plants and actually split the stems to find the growing point or the developing head to more closely examine the condition of it. The growing point should be bright white to yellow-green and firm. Freeze injury causes it to become off-white or brown with a water-soaked appearance.

K-State Research and Extension has an excellent **publication, "Spring Freeze Injury to Kansas wheat"**, that provides illustrations and information in detail on the potential injury to the wheat. **This publication can be found online at our Post Rock Extension District Website at www.postrock.ksu.edu.** Simply go to the **Crops tab** on the left hand side of our main page and then to the “Resources” tab on the right hand side. There is also a video posted on our Post Rock District Facebook page providing information on the effects of the freeze on wheat. Watch for further updates on our wheat conditions at our Post Rock Extension District Website or emails from me.

If you have further questions on **spring freeze injury** in your wheat crop, contact me at any Post Rock Extension District Office in Beloit, Lincoln, Mankato, Osborne or Smith Center.

Post Rock Extension District of K-State Research and Extension serves Jewell, Lincoln, Mitchell, Osborne, and Smith counties. Sandra may be contacted at swick@ksu.edu or by calling Smith Center, 282-6823, Beloit 738-3597, Lincoln 524-4432, Mankato 378-3174, or Osborne 346-2521. Join us on Facebook at "Post Rock Extension" along with our blog site at "postrockextension.blogspot.com. Also remember our website is ***www.postrock.ksu.edu*** *and my twitter account is @PRDcrops.*