

“Views With Van”

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SPECIAL FEATURE....Early Spring Freeze to Kansas WHEAT

The weekend of April 29 – May 1 was very challenging to the Kansas wheat crop, especially in the western portion of the state. Over that period, anywhere from 1 to more than 21 inches of snowfall covered the majority of western Kansas which corresponds to roughly 40% of the wheat

acreage in the Wheat State.

The snowfall was also accompanied by below-freezing temperatures during a long period of time. During the mornings of April 30 and May 1, minimum temperatures ranged from 27 to 31°F in the western third of the state. While temperatures did not reach extreme low levels, they held below freezing for extended periods of time, ranging from zero hours in central Kansas to as many as 21 hours in Wallace County during the April 29 – 30 period, and 24 hours in Tribune during the April 29 to May 01 period. This area about 30-32 degrees.

Wheat injury due to cold temperatures is more likely if it occurs repeatedly and if it is windy at night. Such conditions were experienced over the course of April 29 – May 1. During this period, we observed near below-freezing temperatures three consecutive nights and wind speeds of more than 40 miles per hour for more than 6 consecutive hours. The three consecutive nights with below-freezing temperature reduces the chances that wheat can escape freeze injury by having tillers that emerged at different times or wheat flowers within the same head pollinating at different times.

A cold spell during the spring at earlier stages of wheat development, when a minimum of 2-3 inches of snowfall is present and entirely covers the wheat crop, it is often positive as it buffers cold damaged from temperatures lower than 32°F due to insulation. This is particularly true during the winter months, when the wheat stem has not started to elongate.

However, the snowfall events observed during the April 29 – May 1 period were heavy due to a high moisture content, and in many cases had the wheat lying flat on the ground. In some cases, the entire plants might have simply lodged without actually breaking the stems, a case in which the crop might stand back up again in the near future after the snow melts. In other cases, however the sheer weight exerted on top of the wheat crop might have caused the stems to break in many fields causing another source of yield loss in addition to the cold temperatures.

At least one week to 10 days will be needed to properly assess the situation, after the snow melts away. The yield loss will depend on stage of crop development, severity of stem breaking, and number of hours of below-freezing temperatures observed.

Yield losses due to stem breaking are generally lower if the crop is at boot stage (when it still has time to compensate with late tillers) as compared to a crop at anthesis or early stages of grain development. Similarly, the crop at boot stage is also more protected from cold temperatures than a crop at or near anthesis. Thus, larger yield losses from the heavy snow and below-freezing temperatures might be expected in parts of the state where the crop is near anthesis (flowering) as than where the crop was still at boot stage.

Possibly, fields in the northwest corner of the state where the crop was mostly at boot stage might still produce a decent crop, depending on the severity of stem breakage. In this situation, the majority of the yield loss should come from stem breaking due to the heavy snow, but the long period of time at below-freezing temperatures might also contribute to any possible yield

loss. These speculations are based on our understanding of wheat response to different stresses, and the actual damage will need to be assessed on a field-by-field situation after the snow melts away. For excellent Information about early freeze to Kansas go to ksre.ksu.edu and search for pub C-646, or contact any office in the Twin Creeks District, Norton, Sheridan or Decatur county