



K-STATE
Research and Extension

Extension Agronomy

eUpdate

03/30/2016

These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 swatson@ksu.edu, Jim Shroyer, Crop Production Specialist 785-532-0397 jshroyer@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Latest round of below-freezing temperatures again concerns Kansas wheat producers

The Kansas wheat crop was once again exposed to low air temperatures over the March 22 – 28 period. Minimum air temperatures ranged from 13 degrees F in western Kansas to 35 degrees F in southeast Kansas (Figure 1). The western half of the state was again exposed to minimum temperatures below 24 degrees F, the threshold below which there can be damage to the wheat's growing point when the wheat is at jointing stage or beyond.

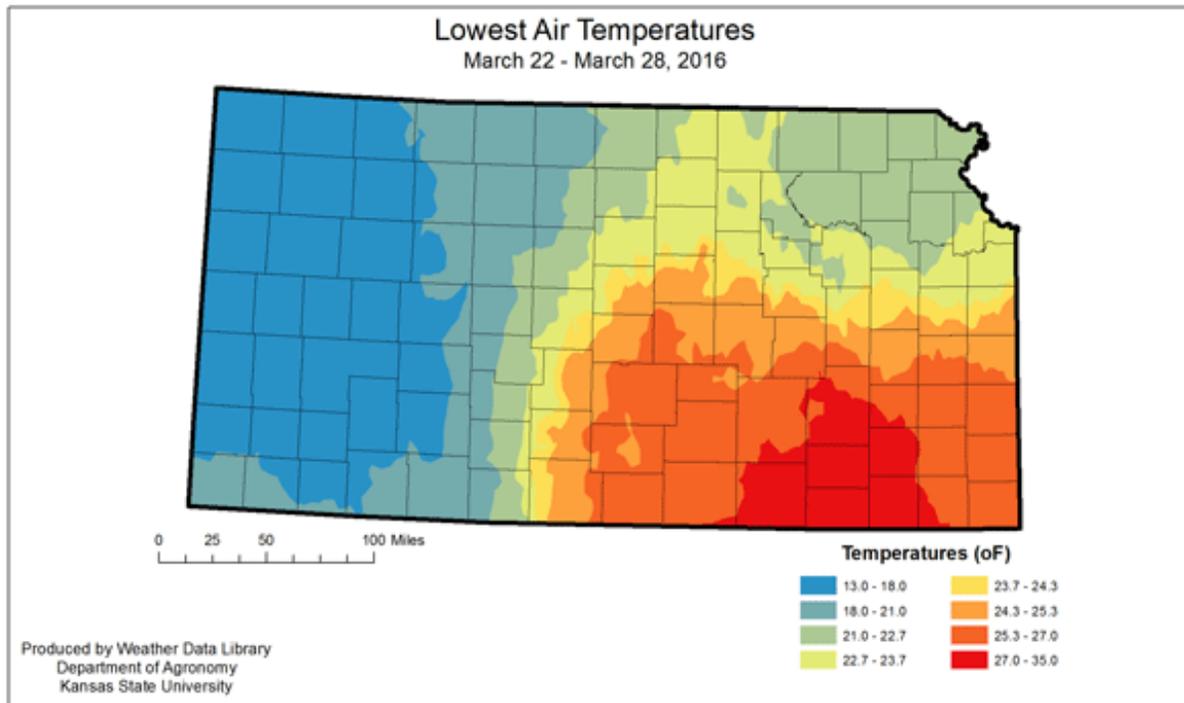


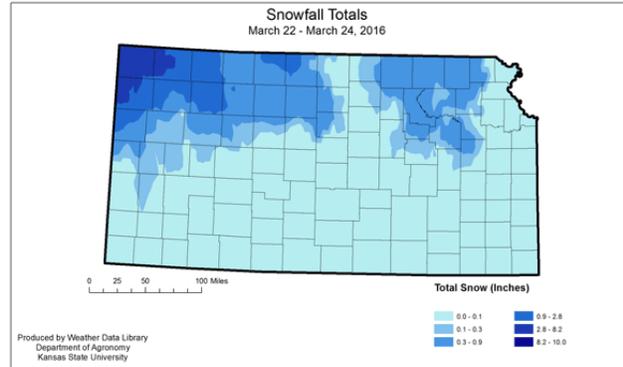
Figure 1. Coldest minimum temperatures measured in the period March 22 – March 28.

The cold air also brought snowfall to northern Kansas during the period of March 22-24, ranging from zero to as much as 10 inches of snow (Figure 2). While the larger snowfall totals might have insulated and protected the developing wheat crop from cold air temperatures during March 22-24, the coldest air temperatures occurred during March 26-27. Most of the snowfall had most likely melted by then, offering no insulation to the wheat crop.

The coldest spell was during the night of March 26-27. On that night, the western third of the state observed anywhere from 0.5 hours in Meade County (southwest Kansas) to 10.1 hours in Sherman County (northwest Kansas) of air temperatures below 24 degrees F (Figure 3).

The risk of damage to wheat is a function of the minimum temperature attained, the duration of time spent at potentially damaging temperatures, and stage of crop development. While the coldest temperatures were reported in northwest Kansas, the majority of the wheat fields in that region had not reached jointing stage at that point. Because the growing point is still below or close to ground level for the most part in that region, that wheat will be more resilient to cold temperatures. The below-freezing temperatures will most likely cause leaf damage and a rough look to the crop in

northwest Kansas, but the growing point should have been insulated from the cold air temperatures in most cases (Figure 4). Symptoms may be worse in heavy-residue no-till situations where seed-soil contact may have been impaired at time of sowing. In those cases, the crown may be less insulated



by the soil and more susceptible to freeze injury.

Figure 2. Total snowfall across Kansas during the March 22 – March 24 period.

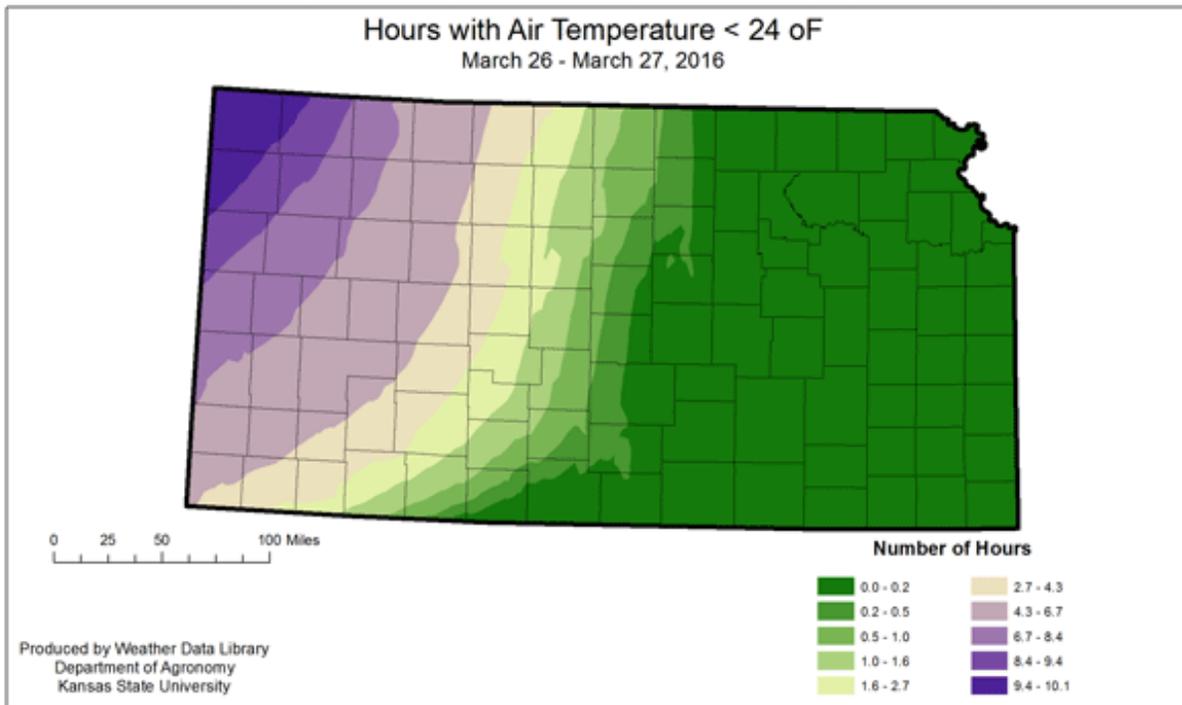


Figure 3. Total hours with temperature below 24°F on March 26-27.



Figure 4. Typical symptoms of freeze damage to the leaf tissue in a field near Manhattan on March 29, 2016. Photos by Romulo Lollato, K-State Research and Extension.

In the night of March 26-27, southwest Kansas had anywhere from 0.5 hours to 6.2 hours of temperatures below 24°F and many fields in the region were already past jointing or even reaching the second node, being more susceptible to freeze damage than earlier growth stages. Where air temperatures were sustained below 24°F for over 2-3 hours (Figure 3), damage to growing point of primary tillers in more advanced fields may be sustained. Still, it is important to consider that average soil temperatures were relatively high, actually above 40°F in most of southwest Kansas (Figure 5). These high soil temperatures may help buffer freezing air temperatures and decrease the extent of the damage to the developing wheat crop.

Central and south central Kansas, where the wheat crop is more advanced and therefore more susceptible to freeze injury, was not exposed to air temperatures below 24°F, which could possibly cause damage to the growing point. This region received anywhere from 0 to 6 inches of snowfall during the period March 25-28 (Figure 6), which brought some needed moisture to the crop.

Based on the weather during these last few weeks, the wheat crop in southwest Kansas seems to be where most of the freeze and drought damage may have been sustained. Producers concerned with possible freeze damage to their wheat crop should wait a few days before scouting for any possible damage. Seven to ten days of warm temperatures are needed for freeze symptoms to be apparent following the latest freeze event.

For more information on scouting freeze damage to wheat, please see eUpdate Issue 555 article "[Diagnosis of late winter/early spring freeze injury on wheat](#)" or the publication "[Spring Freeze Injury to Kansas Wheat](#)" K-State Research and Extension publication C646, also available at county and district Extension offices.

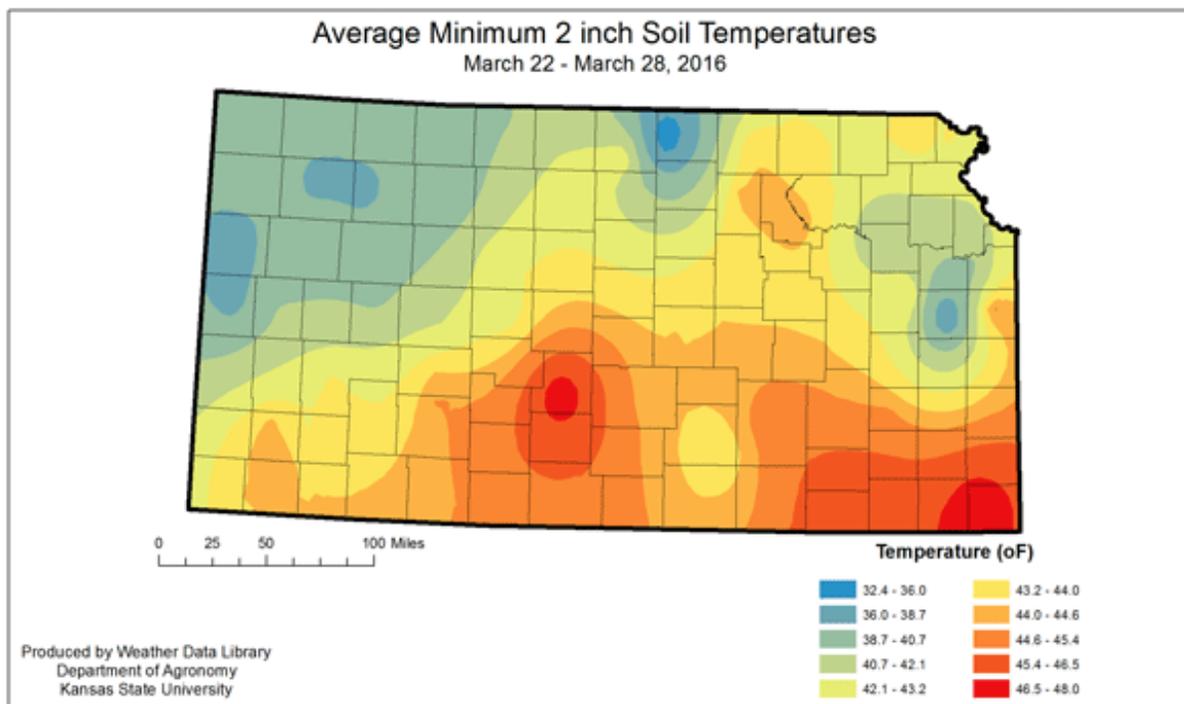


Figure 5. Average minimum 2-inch soil temperature during the March 22 – 28 period.

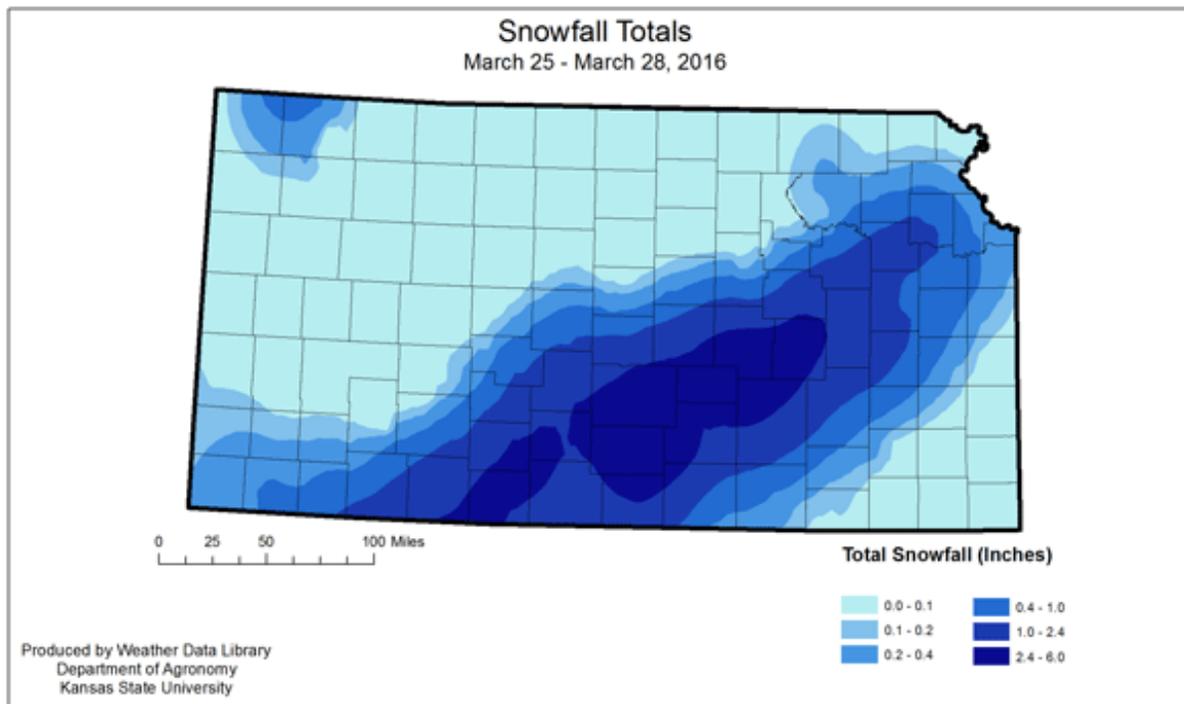


Figure 6. Total snowfall across Kansas during the March 25 – March 28 period.

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