News Column

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Wheat crop and the below freezing temperatures

A month or so ago our wheat crop in Ellis County was behind the average normal growth and development for the time of year. However, in my opinion and observation it has really taken off and grown significantly in the last 3 to 4 weeks. We were fortunate to have adequate soil moisture and when it warmer up, it took off.

So much so, that I am concerned about our wheat crop and what the below freezing temperatures might have done in Ellis County and the surrounding counties. Every week myself and Greg Kerr, FSA Director are required to do a weekly crop progress report to the USDA Agriculture Statistics Service. We collectively reported that the wheat in Ellis County was 79% jointed. It is an estimation but we do our best to drive around and look at fields and visit with growers.

Once wheat has started to joint, elongate and put on its' first internode is when the growing point or tiny wheat head is above the soil surface, it sits up top of the first joint/internode. At this point it becomes much more vulnerable to freezing temperatures. Of course there are other factors involved in the vulnerability of the crop. Such as soil temperature, soil moisture, snow and ice covering the plants can even help insulate the plants from the cold temperatures, landscape/topography of the field, variety and how cold did it get and for how long.

And of course there is a saying about wheat, it is like a cat and seems to have 9 Lives, in other words it will fool you. Below is a chart from K-State Research & Extension of a study done some years ago on wheat in a growth chamber, in which they could carefully control the temperature and duration to measure the potential effects of freeze injury on wheat at various growth stages. This information comes from a publication we have "Spring Freeze Injury to Kansas Wheat", at or you can request a copy from your Extension Office, https://bookstore.ksre.ksu.edu/pubs/c646.pdf

Table 1. Temperatures that cause freeze injury to wheat at spring growth stages and symptoms and yield effect of spring freeze injury.

Growth stage	Approximate injurious temperature (two hours)	Primary symptoms	Yield effect
Tillering	12 F (-11 C)	Leaf chlorosis; burning of leaf tips; silage odor; blue cast to fields	Slight to moderate
Jointing	24 F (-4 C)	Death of growing point; leaf yellowing or burning; lesions, splitting, or bending of lower stem; odor	Moderate to severe
Boot	28 F (-2 C)	Floret sterility; spike trapped in boot; damage to lower stem; leaf discoloration; odor	Moderate to severe
Heading	30 F (-1 C)	Floret sterility; white awns or white spikes; damage to lower stem; leaf discoloration	Severe
Flowering	30 F (-1 C)	Floret sterility; white awns or white spikes; damage to lower stem; leaf discoloration	Severe
Milk	28 F (-2 C)	White awns or white spikes; damage to lower stems; leaf discoloration; shrunken, roughened, or discolored kernels	Moderate to severe
Dough	28 F (-2 C)	Shriveled, discolored kernels; poor germination	Slight to moderate

It takes about 7 to 10 days after a freeze with preferably some warm days to really be able to go out and start slicing stems to observe the head for any apparent freeze injury.

Because of the COVID-19 situation, our office door is locked but our office professional Theresa Meis is inside working, answering the phone and emails, and the agents are working from home. I would be glad to take a look at your wheat fields in Ellis and Barton County. You can dig up some plants and drop them off at our office, knock on the front door to let Theresa know. You can call our office 785-628-9430 and Theresa will relay the message to me or email me works great scampbel@ksu.edu

If I come out to look at your fields, and I can, we have to keep the social distancing in mind at all times.

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