

News Column

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## SPRING FREEZE INJURY

I planted my first wheat crop in the fall of 1980. It was continuous cropped wheat on a field I rented from my great-uncle Theron. The field was just on the outskirts of Glade, Kansas, about 160 miles west of here, where rainfall is often scarce.

The winter of 1980-81 and well into the spring of 1981 was extremely dry in that part of the state. My wheat started looking sort of blue in March, then turned brown in April. It's something most folks around here probably haven't seen, but it was so dry that the wheat was dying.

Then it rained.

In mid-April my wheat started growing again, sending up new tillers to replace the old growth that had died. It greened up and looked kind of good,....if you didn't compare it to other fields that hadn't been hammered as bad by the drought.

My dad had some really nice wheat. I especially remember the field by the creek, on some really good bottom ground. It had been fallowed the summer before planting, and even with the drought, looked like 100 bushel wheat. Yes, that's an exaggeration – we never raised 100 bushel wheat – but it could have made 60 bushels per acre, for sure.

Does anybody remember 1981? That's the year we had a late spring freeze. Dad's average yield for the whole farm was seven bushels per acre. That beautiful field next to the creek made about two bushels per acre. My pathetic, drought-stricken field, made 14 bushels per

acre.

So, why the difference in yield? Why did my sickly wheat out-yield the good fields? Because it was far enough behind that it didn't suffer as much freeze damage. In fact, it was so far behind – having had to start over in April – that it didn't have any freeze damage at all. Fourteen bushels per acre is what it was going to make, with or without the late freeze.

Wheat all across Kansas is ahead of schedule this spring due to unusually warm temperatures in January, February, and March. In southwest Kansas temperatures were low enough, and the wheat was far enough along, to be damaged by the cold snap we experienced March 16 and 17. In this part of the state, our wheat is later and we didn't see any damage.

The low temperatures in mid-March weren't unusual. Instead, the stage of development was far ahead of normal, making the wheat more susceptible to freeze damage. Once wheat is jointed, injury can occur if the temperature stays below 24 degrees Fahrenheit for two hours.

Keep in mind that air temperature isn't really the measurement that matters. What really matters is the temperature at the growing point. Warm soil and a lush plant canopy can provide a micro-climate near the soil surface that is warmer than the recorded air temperature. Therefore, air temperature alone won't tell us for sure if plants will be damaged.

The following table shows temperatures at which we might expect freeze damage to wheat, and the damage that can be expected.

<u>Growth Stage</u>	<u>Temperature (for 2 hours)</u>	<u>Yield Effect</u>
Tillering	12 F	Slight to Moderate
Jointing	24 F	Moderate to Severe
Boot	28 F	Moderate to Severe
Heading	30 F	Severe

Flowering	30 F	Severe
Milk	28 F	Moderate to Severe
Dough	28 F	Slight to Moderate

Maybe we've already seen our low temperatures for the spring. We certainly hope so since the wheat is so advanced in its development. However, if the temperature drops again you can use this chart as a reference.

If we experience another cold snap, feel free to give me a call. I'll tell you to wait a week or two to evaluate. I've been wrong before, both ways, so I've learned to give it some time before pronouncing a crop dead, or healthy.

If you have questions you can reach me at the Riley County Extension Office at 785/537-6350. Or, you can send e-mail to [gmclure@ksu.edu](mailto:gmclure@ksu.edu).

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