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Wheat Yield Response to Planting Date

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Wet weather has delayed harvest and delayed wheat planting. The question of whether to plant wheat late, or not plant it at all, is a concern for producers. The effects of planting late are difficult to predict because seedling emergence and grain filling occur in two different years. Delayed wheat planting may have little effect on the timing of grain fill. Instead, the effect of planting date on wheat yield is much less direct and highly dependent on weather conditions between planting and establishment of dormancy. Delayed wheat planting may have little effect on the timing of grain fill.

For a wheat crop to be successful, it must do three things in the fall according to Dr. Bill Wiebold, University of Missouri Crop Production Specialist.

1. Wheat must develop a root system that will resist heaving.
2. Wheat needs to store sugars in the crown to feed early spring growth and protect the growing point from freezing temperatures.
3. Wheat plants need to produce tillers in the fall. Wheat can tiller in the spring but it is unlikely that spring tillering can produce enough tillers to maintain yield potential.

All of these processes require active plant growth. If the temperatures are too low or the time between emergence and dormancy is short, plant growth will be diminished. Temperature after planting will greatly affect winter survival and the number of tillers. In turn, winter survival and the number of tillers will affect yield next year.

There is limited data that can be used to predict wheat yield responses to planting date. There is some limited data from Ohio and Kentucky. This data is based on days after the fly free date, which is October 6 in central Missouri. According to this data, yields decline to 90% of maximum yield at 21 days past fly free date. At 28 days and 35 days past fly free date, yields drop to 80% and 60% of maximum yield, respectively. However, Bill Wiebold suspects that if Missouri data had been used, the yield decrease over time would have been less for southern Missouri and steeper for northern Missouri. The main point to remember is the effect of fall weather. Warmer than normal temperatures will allow additional wheat plant growth, so the yield loss would be less. Cooler than normal temperatures will decrease growth and yield loss could be greater than expected.