

## Wheat Tiller Number and Spring Nitrogen Recommendations

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The target population for an optimal stand of winter wheat in the fall is between 30 and 35 plants per square foot. Generally environmental conditions in the fall allow winter wheat seedlings to produce an additional 2 to 3 fall tillers. However, due to delayed wheat planting and cool wet environmental conditions last fall, tiller number in this year's crop may be reduced. To increase tiller number and crop yield it may be beneficial to apply nitrogen at green-up in 2005.

In wheat, nitrogen serves two important functions. Nitrogen fertilizer may be used to manipulate the population (increase tiller number) as well as supply the nutritional needs of the crop to produce protein. Therefore, wheat tiller number is an important indicator of nitrogen application timing. Research indicates that if tiller number is greater than 70 per square foot it may be beneficial to delay nitrogen application until just prior to jointing. The advantage of a delayed nitrogen application is an increase in nitrogen use efficiency and a potential yield increase, however if tiller number is less than 70 per square foot it is recommend to apply nitrogen at green-up in order to increase the effective plant population.

Generally when wheat follows soybean, 90 to 100 pounds of nitrogen per acre in the spring is enough to support vigorous stem elongation and head development. However, the amount of nitrogen needed is often more variable for wheat following corn. Nitrogen variability following corn is related to the environmental conditions that both the corn and wheat crop have been exposed to. If environmental conditions were conducive to maximize corn yield then very little residual nitrogen may be available, however if environmental conditions were dry and corn yield was low then residual nitrogen may be much greater. Therefore, when wheat follows corn a tissue test to predict the optimal amount of N needed may prove beneficial.

Plant samples for a tissue test should be taken just prior to jointing. It is important to take representative samples and avoid areas of the field that look different than the field as a whole. Plants should be cut approximately one-half inch off the ground and any soil or dead leaf tissue removed. Place samples in a paper bag and ship immediately to the lab. Never put samples in a plastic bag because of the greater risk of tissue deterioration. Please refer to Table 1 for N recommendations based on plant tissue testing.

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Table 1. Guidelines for nitrogen use on wheat based on plant tissue testing.

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Plant N	N recommendation
%	lb/ac
2.3	100
2.7	80
3.2	60
3.6	40
4.0	20

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Lloyd Murdock and John Grove. Fertilizer Management. In: A Comprehensive Guide to Wheat Management in Kentucky. <http://www.ca.uky.edu/agc/pubs/id/id125/id125.htm>

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