



**THE OHIO STATE UNIVERSITY**

COLLEGE OF FOOD, AGRICULTURAL,  
AND ENVIRONMENTAL SCIENCES

### **Hardin County Extension News Release**

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### **Is It Too Early to Apply Nitrogen to Wheat?**

*Hardin County* – With melted snow and warmer weather in the forecast, is it time to apply nitrogen to wheat? The short answer. Wait until green-up to apply nitrogen to wheat.

The long answer. Wheat does not require large amounts of nitrogen until stem elongation/jointing (Feekes Growth Stage 6), which is generally the middle or the end of April depending on the location in the state and spring temperature. Ohio research has shown no yield benefit from nitrogen applications made prior to this time. Soil organic matter and/or nitrogen applied at planting generally provide sufficient nitrogen for early growth until stem elongation.

Nitrogen applied prior to rapid uptake by the plant has the potential to be lost and unavailable for the crop. Nitrogen source will also affect the potential for loss. Urea-ammonium nitrate (28%) has the greatest potential for loss, ammonium sulfate the least, and urea would be somewhere between the two other sources.

Ohio research has shown that yield losses may occur from nitrogen applied prior to green-up regardless of the nitrogen source. The level of loss depends on the year (losses are smaller if the ground is not frozen or snow/ice covered). This same research did not observe a yield increase from applications made prior to green-up compared to green-up or Feekes Growth Stage 6 applications. Keep in mind that green-up is a descriptive, relative term and not a definable growth stage. Our definition of green-up is when the new growth of spring has covered the dead tissue from winter giving the field a solid green color- thus, growing plants.

There is a legitimate concern that wet weather may prevent application of nitrogen at early stem elongation. Ohio research has shown a yield decrease may occur when nitrogen application is delayed until Feekes Growth Stage 9 (flag leaf fully emerged). Thus, a practical compromise is to topdress nitrogen at any time fields are suitable for application after initial green-up to early stem elongation. There is still a potential for loss even at green-up applications. To lessen this risk a producer may want to use a nitrogen source that has a lower potential for loss such as urea or ammonium sulfate. ESN (polymer-coated urea) is another option, but it needs to be blended with urea or ammonium sulfate to ensure enough nitrogen will be available for the crop between Feekes Growth Stage 6-9. The source of nitrogen becomes less important as the application date approaches stem elongation. The percentage of urea and/or ammonium sulfate would need to be increased with ESN for application times closer to Feekes

Growth Stage 6. A producer may want to consider the use of a urease inhibitor with urea if conditions are favorable for volatilization losses: warming temperatures, drying winds and no rain in the forecast for 48 hours.

A split application of nitrogen may also be used to spread the risk of nitrogen loss and to improve nitrogen efficiency; however, Ohio State University research has not shown a yield increase from this practice compared to a single application after green-up. In a split system, the first application should be applied no sooner than green-up. A small rate should be applied with the first application since little is needed by the crop at that time and the larger rate applied closer to Feekes Growth Stage 6.

In summary, a producer may get away with applying nitrogen prior to green-up on wheat. However, university data has not shown a yield advantage for these early applications, but results have shown in certain years a major nitrogen loss and yield reduction from applications prior to green-up. Why take the risk? Just wait until green-up; the wheat does not need most of the nitrogen until April and May anyway.

*Article written by Laura Lindsey, OSU Extension-Small Grains Specialist and Ed Lentz, OSU Extension-Hancock County. Edited by Mark Badertscher, OSU Extension-Hardin County.*