



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

Hardin County Extension News Release

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Topdressing Wheat

Hardin County – Wheat is turning green three weeks earlier than the past two years but closer to normal. Green-up stage in wheat is when the new growth of spring has covered the dead tissue from winter giving the field a solid green color from the growing plants. Greening wheat will eventually need nitrogen fertilizer to grow properly and to produce optimal yields. “When is the best time to topdress wheat with nitrogen?” is a common question which can be best answered by understanding when the wheat crop needs nitrogen. Wheat does not require large amounts of nitrogen until stem elongation or jointing.

Jointing is the word farmers use to describe a node, which is an area on the stem that looks swollen and darker green than the rest of the stem. Leaves and other organs develop from nodes. The first visible node is an indicator that the growing point has been pushed above the soil surface. Eventually four nodes with a leaf will appear on the elongating stem. The growing point with the future grain tissue will be above the highest node.

Agronomists use the Feekes scale to record the growth and development of wheat. A wheat plant has reached Feekes Growth Stage 6 rather than jointing when the first node is visible above the ground. The first node generally becomes visible the end of April for northwestern Ohio but it may be several weeks earlier this year. OSU research has shown no yield benefit from nitrogen applications made prior to jointing. Soil organic matter and/or nitrogen applied at planting generally provides sufficient nitrogen for early growth.

Nitrogen applied prior to jointing has the potential to be lost and unavailable for the crop. The nitrogen source will also affect the potential for loss. Urea-ammonium nitrate (28% nitrogen solution) has the greatest potential for loss, ammonium sulfate the least, and urea would be somewhere between the two other sources. Farmers do not want to lose their nitrogen investment or contribute to the nutrient load of Lake Erie or any other water source. Therefore, application time of nitrogen fertilizer is important.

OSU 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. For example, losses are smaller if the ground is not frozen or snow/ice covered. University research did not observe any yield increase from applications made prior to green-up for any of the three years of the study compared to green-up or Feekes Growth Stage 6 applications. Wet weather may prevent application of nitrogen at jointing.

University research has also shown a yield decrease may occur when nitrogen application is delayed until the early boot stage, when the wheat grain head just begins to emerge from the stem. A practical compromise is to topdress nitrogen any time fields are suitable for application after green-up to jointing. There is a potential for loss even at green-up applications, so a producer may want to use a nitrogen source that has a lower potential for loss such as urea or ammonium sulfate.

ESN, a polymer-coated urea, would be another option but it needs to be blended with urea or ammonium sulfate to insure enough nitrogen will be released for the crop during the critical uptake stages. Although this product is less prone to nitrogen loss from leaching out of the root zone or ammonia volatilization, it is more expensive. The source of nitrogen becomes less important as the application date approaches jointing. The percentage of urea and/or ammonium sulfate would need to be increased with ESN for application times closer to this time.

Farmers may decide to split apply spring nitrogen to reduce the risk of nitrogen loss and to improve nitrogen efficiency. OSU research has not shown a yield increase from this practice and the two applications would increase input costs. In a split system, the first application should be applied no sooner than green-up. A smaller 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 jointing. Farmers will be watching their wheat closely this spring as the warmer temperatures may cause jointing to occur several weeks earlier than normal. As a result, they will be actively topdressing nitrogen on wheat the next several weeks.

Article written by Ed Lentz, OSU Extension-Hancock County and revised by Jim Hoorman, OSU Extension-Putnam County and Mark Badertscher, OSU Extension-Hardin County.