

INSIDE GRUNDY COUNTY
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Now is the time of year to evaluate your nitrogen fertilizer program to determine if you are maximizing profits by applying optimal amounts of nitrogen. You can do this by using the “end of season cornstalk test”. Studies have shown that the nitrogen (N) status of a corn crop can be assessed by measuring nitrate concentrations in the lower portion of cornstalks at the end of the growing season. Corn plants suffering from inadequate N availability remove N from the lower cornstalks and leaves during the grain-filling period. Corn plants that have more N than needed to attain maximum yields, however, accumulate nitrate in their lower stalks at the end of the season.

The end-of-season cornstalk test was calibrated by establishing relationships between yields and stalk nitrate concentrations. In essence, use of the test enables a producer to ask the crop if it had adequate N late in the growing season. The concentration of nitrate in the stalk at the end of the season reflects all factors that influenced N availability and N needs during the growing season.

When interpreting the results of the test, consideration must be given to weather conditions that occurred during the growing season.

Why use the test? Surveys using the late-spring soil test and the end-of-season cornstalk test indicate that a high percentage of Iowa cornfields receive substantially more fertilizer N than is economically optimal. This means that many corn producers can increase their profits by identifying these fields and reducing rates of N fertilization accordingly. The underlying reason for over-fertilization is that corn plants show no visual symptoms that enable producers to recognize when above-optimal rates of N have been applied. This means that producers can apply too much N year after year and never suspect a problem with their nitrogen management.

When should samples be taken? The time for sampling is between one and three weeks after black layers have formed on about eighty percent of the kernels of most ears. The portion of each plant sampled is the eight inch segment of stalk found between six and fourteen inches above the soil. Leaf sheaths should be removed from the segments. Stalks severely damaged by disease or insects should not be used.

Who should use the test? All corn producers should consider using the test on a few fields each year. Those who learn that their fields usually test in the optimal range need not make larger investments in time or money. Those who learn that they usually apply too much N to some or all of their fields will find it profitable to adjust rates of application. Thoughtful use of the test for a few years should help producers optimize rates for their fields.

For more information about the end of season cornstalk test, contact the Grundy office of ISU Extension at 319-824-6979 and ask for publication PM 1584, which was the source of information for this column.