The end-of-season cornstalk nitrate N test

Cornstalk residual nitrate levels are an indicator of whether or not the nitrogen supply was adequate for corn development. The test measures nitrate concentration in the lower portion of the cornstalk at the end of the growing season.

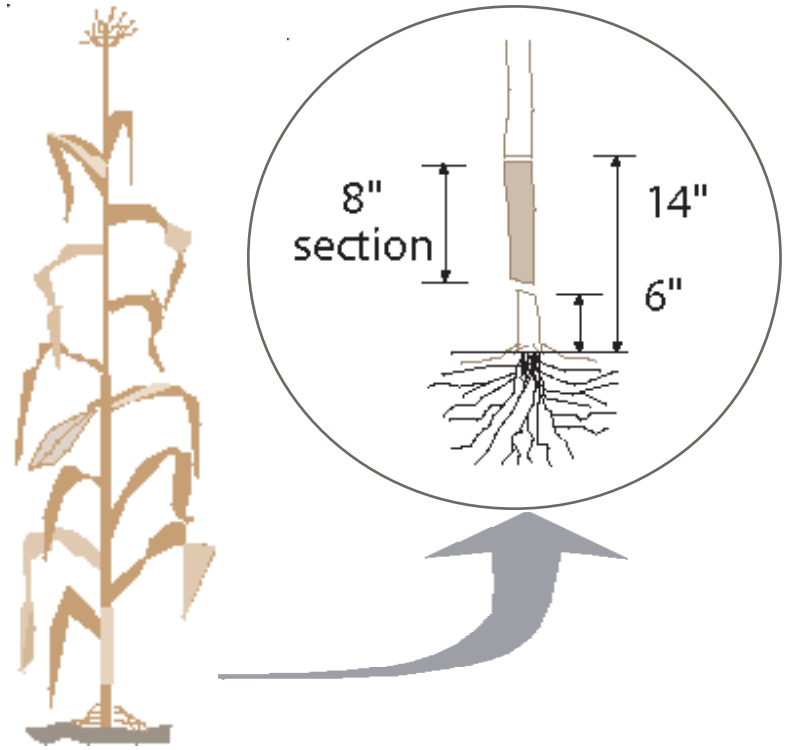
The basis of the test is that a corn plant suffering from inadequate N availability removes nitrogen from the lower cornstalk and leaves during grain filling. If the plant has more N than needed for maximum yields, nitrate accumulates in the lower stalks at the end of the season.

Producers can use this information to determine whether or not their corn crop had adequate N late in the growing season. While the cornstalk nitrate N test is a valuable tool to evaluate nitrogen management, drastic changes in N management should not be made with just one year's results. Annual sampling can provide trends of residual nitrate levels over time, accounting for seasonal variability, ultimately increasing the confidence in refining N management.

Low stalk nitrate nitrogen levels (less than 250 parts per million, or ppm) indicate that additional nitrogen would have been likely to increase yields. The marginal range (250-700 ppm) indicates a level very close to the minimal amount needed by the crop, but grain yield may not be reduced. The optimum rate (700-2,000 ppm) indicates that nitrogen availability was close to the rate needed by the plant, while levels in excess of 2,000 ppm indicate a high probability that there was more nitrogen than needed.

The cornstalk nitrate N test is a valuable tool for nitrogen management, however drastic changes in nitrogen management should not be made with just one year's result. Annual sampling can provide trends of residual nitrate levels over time, accounting for seasonal variability, ultimately increasing the confidence in refining nitrogen management.

Try using the end-of-season stalk nitrate test to compare two nitrogen management practices, such as two N rates or manure versus manure plus commercial nitrogen.



Here's how to collect samples:

Cut an 8-inch segment of stalk beginning 6 inches above the soil. Optimum time for sampling is when the corn is between one to three weeks after black layer formation. Remove the leaf sheaves. Do not sample stalks severely damaged by disease or insects.

Fifteen 8-inch segments make up a single sample. Areas of a field differing in soil types or management history should be sampled separately.

Place the samples in paper (NOT PLASTIC) bags and send to the lab as soon as possible. If it's not possible to send the samples to the lab within one day of removing them from the stalk, place them in the refrigerator — but don't let them freeze.