

9-14-1998

Testing cornstalks for N this fall

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Recommended Citation

Blackmer, Alfred M., "Testing cornstalks for N this fall" (1998). *Integrated Crop Management News*. 2256.
<http://lib.dr.iastate.edu/cropnews/2256>

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Abstract

Sampling time for the end-of-season cornstalk test is rapidly approaching. Basic information for doing the test is provided in extension publication Pm 1584, *Cornstalk Testing to Evaluate Nitrogen Management*, but here are five additional tips for using the test this fall.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences



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Sampling time for the end-of-season cornstalk test is rapidly approaching. Basic information for doing the test is provided in extension publication Pm 1584, *Cornstalk Testing to Evaluate Nitrogen Management* [1], but here are five additional tips for using the test this fall.

1. Expect significant amounts of variability within fields. Above-average spring rainfall in much of Iowa prompted above-average losses of nitrogen (N) and variability in N status within fields. Marked variability in corn color and height has been apparent within many fields all summer. Such variability, of course, is an underlying reason for moving toward site-specific management.

Much of this variability can be addressed by collecting separate samples (sets of 15 stalk segments) from different parts of fields. Collecting samples from 4 to 6 separate areas per field usually gives a reasonable assessment of N status if each area sampled is selected to be representative of a significant portion of the field. Recording information such as landscape position, soil mapping unit, yield level, corn color during the season, and weed pressure for each area sampled greatly facilitates interpretation of the results.

2. Expect low concentrations of cornstalk nitrate in samples from areas having high weed pressure. This relationship is commonly observed, and it can be explained by recognizing that weeds compete with corn for N.
3. Consider collecting cornstalk samples during grain harvest. This minimizes the unpleasant task of searching through standing corn to find sampling areas. Selection of appropriate areas to sample becomes easier as combining reveals spatial patterns in landscape position, corn height, weed pressure, and other factors of potential interest. Sampling costs little when done by persons waiting for grain wagons to be filled or emptied. Research has shown that good results are obtained when samples are collected at the usual time of grain harvest. If enough stubble remains standing, stalk samples can be collected after harvest until the first rainfall occurs. Combine operators can easily raise the header slightly where samples are to be taken.
4. Recognize that nonuniform application of fertilizer N is a common cause of extreme variability in cornstalk nitrate concentrations. Research has shown that nonuniform application of fertilizer currently is a serious problem in Iowa. Avoid sampling areas where skips or overlaps are likely during fertilization. There is little point to sampling areas where nonuniform application of fertilizer N resulted in observable differences in corn color or height during the growing season.
5. Remember that the cornstalk test essentially asks whether the plants sampled had more N than needed, less N than needed, or just the right amount of N during the

second half of the growing season. This test, therefore, gives site-specific feedback that can be used to evaluate and improve N management. This feedback is useful because all efforts to evaluate and improve N management depend on the ability to characterize supplies of N relative to plant needs under specific field conditions. The end-of-season test for cornstalk nitrate is the easiest and least expensive method for obtaining this essential information.

This article originally appeared on page 167 of the IC-480(22) -- September 14, 1998 issue.

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[1] <http://www.exnet.iastate.edu/Publications/PM1584.pdf>

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