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THE SOIL PROFILE

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Late-Season Nitrogen Sufficiency Tests for Field Corn

Near the end of each growing season corn growers have an opportunity to evaluate the effect of their N management program. This information can be helpful to make better N rate decisions for next year's crop. New techniques are now available to evaluate crop N status late in the growing season.

The end-of-season corn stalk nitrate test was developed in Iowa and was previously described in the Fall 1994 issue of *The Soil Profile* newsletter. This technique involves collection of 8-inch segments of mature corn stalks from 15 plants. The samples should be collected within 1 to 3 weeks after the grain has formed blacklayer. The corn stalk segments are cut between 6 and 14 inches above the ground. The samples must be sent to a soil testing laboratory that can analyze the stalks for nitrate concentration.

Interpretation for End-of-Season Stalk Nitrate Test:

NO₃-N ppm

< 700	= low, N-deficient, underfertilized
700 to 2000	= optimal range, N-sufficient
> 2000	= excessive, overfertilized

Researchers in Pennsylvania (Agron. J.87:403-407) found that the Minolta chlorophyll meter (model SPAD 502) could be used to evaluate the N sufficiency of corn at the early dent growth stage. This technique involves taking chlorophyll meter readings from corn ear leaves when the kernels are at the 1/4 milk line stage. A critical chlorophyll (SPAD) meter reading of 52 was found to separate N-deficient from N-sufficient treatments. The technique has a 93% accuracy rate to correctly predict the N status of corn but it should not be used when plants have been severely affected by late-season drought or disease. Also the timing for taking chlorophyll readings is important to the accuracy of the test because leaf chlorophyll levels can change rapidly.

Interpretation for Late-Season Chlorophyll Meter Readings:

< 52	= low, N-deficient, underfertilized
52 to 56	= N-sufficient range
> 56	= overfertilized by an excess of more than 45 lbs/N acre

Although chlorophyll meters cost about \$1300, they are convenient to use and provide results rapidly.

Fields Well Beyond the Barn Benefit Most From Manure

Manure is recognized by farmers around the world as valuable fertilizer, but to livestock producers manure also presents a disposal problem. Because of its bulkiness, costs associated with storage and transportation, and environmental concerns manure is sometimes viewed as a liability to the livestock industry. Manure, however, is an asset to cropland that can benefit from the nutrients and organic matter.

Often times manure is applied to the same fields that are close to the barn to save time and the