

## Late Season Stalk Nitrate Test

Are Changes in N Management Needed?

Has your corn silage received the appropriate amount of nitrogen this year?

## What is the Stalk Nitrate Test?

- The stalk nitrate test is a useful tool that indicates whether the nitrogen supply for that year was low, optimal, or in excess to produce the most optimum yielding corn.
- A comparison of two or more years of test results is required before any interpretations can be made.

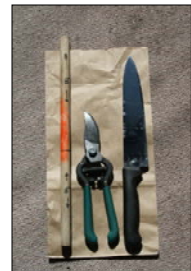
## Timing of Sampling

- Stalk nitrate samples can only be taken in the time frame of up to one week before harvest and one day after harvest (if the stubble is taller than 14 inches).



## Tools Needed for Sampling

- A ruler, tape, or a 14 inch dowel marked at 8 inches
- Hand pruners
- Large kitchen knife or machete
- Brown paper bags



## How Many Stalks Are Needed?

- For fields of 15 acres or less:
  - 15 stalks
- For fields larger than 15 acres:
  - 1 stalk per acre



## Cutting the Stalk



First, measure up 14 inches



Cut so 14 inch stubble remains

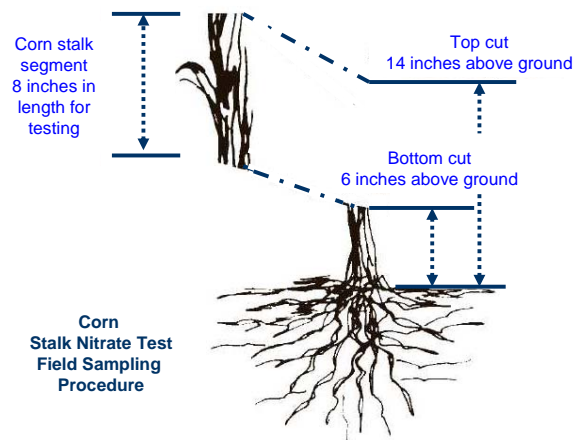


Measure 6 inches from the soil



This leaves an 8 inch stalk

## Cutting the Stalk



## Preparing Stalks for Submission

- During sampling, don't touch the soil with the stalk; soil contamination will adversely affect test results.
- Once the stalks are taken, quarter them lengthwise, and place in a brown paper bag; this speeds the drying process and reduces the possibility of mold growth.

## Quartering



Carefully quarter the stalk using a machete or kitchen knife

## Quartering



Quartering is a quick and easy way to ensure that a quality sample arrives at the laboratory.

## Sample Submission

- Mail stalks within a day after sampling.
- Samples can be submitted to:

Cornell Nutrient Analysis Laboratory (CNAL)  
G01 Bradfield Hall, Cornell University  
Ithaca, NY 14853  
Phone: 607-255-4540

- Submit samples with a "Late Season Corn Stalk Nitrate Test Submission Form"

([www.css.cornell.edu/soiltest/soil\\_testing/forms/submission/Stalknitrate.pdf](http://www.css.cornell.edu/soiltest/soil_testing/forms/submission/Stalknitrate.pdf))

## Interpreting the Results

- Research conducted on New York farms in 2005 and 2006 supports the following interpretations:
  - Low = less than 250 ppm N
  - Optimal = 250 to 2000 ppm N
  - Excess = greater than 2000 ppm N

## Visual Indicators



Low <250 ppm N      Optimal 250-2000 ppm N      Excess >2000 ppm N

## Low (<250 ppm N)

- These fields would likely have benefited from some additional N.
- At harvest time, leaves are dead to or above the ear leaf and/or the entire plant has a light to very light green color.
- Drought symptoms are almost the same as N deficiency symptoms so drought will make N deficiency appear to be worse.



Low <250 ppm N

## Optimal (250-2000 ppm N)

- Nitrogen availability in these fields was within the range needed for optimum economic corn production.
- In this range, three of the five lower leaves will likely be dead by silage harvest time while the top leaves remain medium to dark green.



Optimal 250-2000 ppm N

## Excess (>2000 ppm N)

- The corn had access to more N than it needed for optimum yield.
- Most likely, fewer than three leaves from the bottom will have died and the top leaves remain medium to dark green.
- If manure and/or N fertilizer were applied, the application(s) supplied more N than the crop needed that growing season.



Excess  
>2000 ppm N

## Multiple Year Assessment

- Field history, manure and fertilizer application, other N inputs, soil type, and growing conditions all impact stalk nitrate test results, which is why stalk nitrate test results should be monitored for 2-3 years before management changes are made.

## More Information

- Nutrient Management Spear Program (NMSP) Agronomy Fact Sheet series:  
<http://nmsp.css.cornell.edu/publications/factsheets.asp>
- Quirine Ketterings at [qmk2@cornell.edu](mailto:qmk2@cornell.edu)