United States Department of Agriculture
Natural Resources Conservation Service

NE-WQL25 2012 Ranking Period 1

# Water Quality and Air Quality Enhancement Activity – WQL25 – Split applications of nitrogen based on a PSNT

**State Criteria (same as NATIONAL CRITERIA) with the following clarifications:**

This enhancement requires the split application of nitrogen during the growing season and the use of one of the following methods for determining if additional nitrogen is needed, how much to apply and when to apply it.

**Pre-Sidedress Nitrate Test (PSNT)**

*Sampling Procedure & Analysis:*

1. Soil samples for the PSNT should be taken to a depth of 12 inches when the corn is 6 to 12 inches tall.
2. Collect a minimum of 15 cores for each sample according to the following. If the field has had manure applied, 20-25 cores should be collected.
   a. Samples should be collected for each management zone and should never represent an area greater than 40 acres. Guidance for establishing management zones can be found in the Practice Specification for Nutrient Management (S-590) or NebGuide (G1740) "Guidelines for Soil Sampling".
3. Immediately send samples to laboratory for nitrate analysis. Analyses should be conducted by laboratories that have successfully met the requirements and performance standards of the Soil Science Society of America.
4. Refer to Practice Specifications for Nutrient Management (S-590) or Iowa State University Extension Publication Pm-1714 "*Nitrogen Fertilizer Recommendations for Corn in Iowa*" available at: http://www.extension.iastate.edu/Publications/PM1714.pdf .

*Interpretation:*

Manure soils, first-year corn after alfalfa and second-year corn after alfalfa – Soils that have received recent application of animal manures or have decaying sods with alfalfa roots seem to mineralize more plant-available N after the time of soil sampling than do other soils. These soils are treated as a separate category when making N fertilizer recommendations. These recommendations are given in Table 1.

1. The first step for making recommendations from Table 1 is to decide whether the top half of the table or the lower half of the table best describes the current prices for grain.

Table 1 Nitrogen fertilizer recommendations for manure soils[a] and corn after alfalfa

| Grain & Fertilizer Prices | Soil Test Nitrate | Recommended N Rate | |
|---|---|---|---|
| | | Excess[b] Rainfall | Normal Rainfall |
| | (ppm N) | --------Lb. N/ acre------- | |
| Unfavorable (1 bu buys 7 lb. of N) | 0-10 | 90 | 90 |
| | 11-15 | 0 | 60 |
| | 16-20 | 0 | 0[c] |
| | >20 | 0 | 0 |
| Favorable (1 bu buys 15 lb. of N) | 0-10 | 90 | 90 |
| | 11-15 | 60 | 60 |
| | 16-25 | 0 | 30 |
| | >25 | 0 | 0 |

[a]A field should be considered manured if animal manures were applied with a reasonable degree of uniformity since harvest of the previous crop or in 2 of the past 4 years.
[b]Rainfall should be considered excess if rainfall in May exceeded 5 inches.
[c]Addition of 30 lb. N/acre may have no detectable effects on profits, but producers could reasonably elect to apply this rate.

2. The second step is to decide whether the "excess rainfall" column or the "normal rainfall column of the table best describes weather conditions before the soils were sampled.
3. The third step is to use the results of the soil test to select the appropriate N rate specified. Interpolation between specified N rates is appropriate when site conditions fall between those given.

Corn after soybean and corn after corn

1. The first step in making a fertilizer recommendation for this crop category is to select a critical concentration for nitrate (i.e. the concentration that distinguishes between adequate and inadequate supplies of available N). A critical concentration of 25 ppm-N is appropriate in absence of additional information.
2. The second step is to adjust the critical concentration if excess rainfall occurred at the site shortly before the soils were sampled. Reducing the critical concentration by 3-5 ppm is advised if rainfall is more than 20 percent above normal amounts between April 1 and time of soil sampling.
3. The third step is to estimate fertilizer needs by subtracting the concentration of soil-test nitrate (ppm-N) from the chosen critical concentration (ppm-N). This value is then multiplied by 8. A factor of 8 is used because studies have shown that it usually takes about 8 lb. of N/acre before planting to increase soil-test nitrate-N by 1 ppm.
    - Example: A soil test of 15 ppm and critical concentration of 25 ppm results in a recommendation of 80 lb. of N per acre to be applied.
      (25 ppm – 15 ppm) x 8 = 80 lb. N/acre needed.

**Documentation Requirements (SEE NATIONAL ENHANCEMENT ACTIVITY JOBSHEET)**

**Additional State Documentation Requirements:**

1. Provide a map indicating where the activities are applied.
2. Provide copies of soil test reports if PSNT is used.
3. Recommendations of selected tests.
4. Provide copies of manure analysis results (if applicable).
5. Complete the table for nutrient and fertilizer application on the following page.
6. Complete the fertilizer/application equipment type and calibration date on the following table:

| **Type of Equipment** | **Date of Calibration** |
|---|---|
| *Liquid Applicator* | *3/1/12* |
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**I certify that the enhancement criteria have been met and the required documentation provided to NRCS.**

**Certified by:** _____ **Date:**_____

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| Field Information | | | | Commercial Fertilizer and Manure Information | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tract & Field | Acres | Crop & Yield | Date of last soil test (m/d/yr) | Date Applied (m/d/yr) | Form of Commercial Fert. or Manure | Rate (lb/a) | Application Method | If Manure, Days to Incorp. | N Avail. (lb/a) | P Avail. (lb/a) | Total N Avail. (lb/a) | Total P Avail. (lb/a) |
| *Ex. T1234 & F1* | *78.9* | Crop | PSNT 5/21/09 | 11/30/08 | Beef Solids | 16 T/a | broadcast | No incorp. | 64 | 656 | 154 | 656 |
| | | *Corn* | | 5/1/09 | 28-0-0 liquid | 10 gal/a | broadcast | na | 30 | 0 | | |
| | | Yield | | 6/15/09 | 28-0-0 liquid | 20 gal/a | broadcast | na | 60 | 0 | | |
| | | *200* | | | | | | | | | | |
| | | Crop | | | | | | | | | | |
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| | | Yield | | | | | | | | | | |
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