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PRE-SIDEDRESS NITRATE TEST (PSNT) FOR CORN

Application of the correct amount of nitrogen fertilizer is essential for profitable corn production. Nitrogen fertilizer represents the majority of the fertilizer cost for the corn producer. In addition, corn yields can be adversely affected very quickly if an inadequate amount of N fertilizer is present in the soil profile. Nitrate is subject to denitrification in poorly drained soils and is easily leached in coarse and medium textured soils in years where rainfall is above average in the spring. This has been the situation in many of the corn production areas across the mid section of the United States in 2007 and 2008.

The pre-sidedress nitrate test (PSNT) is a tool that can be used to further refine nitrogen recommendations for corn when excessive rainfall has occurred in spring. If the amount of precipitation since last year's crop has exceeded 10 inches, a PSNT test should be considered to evaluate whether an additional application of N fertilizer is needed for this year's corn crop.

The method for using the PSNT test is as follows:

1. Collect soil samples when the corn is 6 to 12 inches tall. If corn is taller than this, the producer should consider a leaf sample analysis of N to determine further N applications.
2. The sample depth should be 0 to 12 inches and collected in the same manner as a regular soil sample, for example 1 core per 3 – 5 acres over an area no larger than 40 to 60 acres in size, depending on the variability of the field. Composite the cores collected from the area sampled into one sample. Avoid starter and anhydrous fertilizer bands when sampling.
3. Send soil samples immediately to American Laboratory. The soil nitrate results should be available to the client the next working day after the samples arrive at the lab. Results can be returned by email, FAX, and by use of American Laboratory Internet Client Software. Please refer to our fee schedule for current pricing.
4. Critical concentration of nitrate is 20 ppm for yield goals greater than 175 bu/acre, 15 ppm for yield goals of 100 – 175 bu/acre, and 10 ppm for yield goals of less than 100 bu/acre.
5. Calculation of N fertilizer based on PSNT test

    (20 – PSNT test) x 10 = lbs N recommended per acre (>175 bu/acre yield goal)
    (15 – PSNT test) x 8 = lbs N recommended per acre (100 – 175 bu/acre yield goal)
    (10 – PSNT test) x 8 = lbs N recommended per acre (< 100 bu/acre yield goal)

    For example, PSNT = 10 ppm
    (20 – 10) x 10 = 100 lbs N recommended per acre (>175 bu/acre yield goal)
    (15 – 10) x 8 = 40 lbs N recommended per acre (100 – 175 bu/acre yield goal)
    (10 – 10) x 8 = 0 lbs N recommended per acre (<100 bu/acre yield goal)

These recommendations can be decreased in soils where manure has been applied and incorporated into the soil within the past year. Downward adjustments can also be made if the previous crop was soybeans.

Alternately, a profile sample to a depth of 36 inches can be collected and tested for nitrate. If the corn plant is less than 12 inches tall, the profile nitrate test value can be put thru our N recommendation algorithm to recalculate the N recommendation for 2008.