

Delaware Nutrient Management  
Program

DELAWARE CONSERVATION  
PRACTICE STANDARD

**PRE SIDE-DRESS SOIL  
NITRATE TEST (PSNT)**

(Reported by No.)

**DEFINITION**

The Pre-Sidedress Nitrate Test is a late spring soil test that helps producers determine the amount of nitrate in the soil to aid in nitrogen management decisions for corn and to minimize potential groundwater contamination.

**PURPOSES**

This practice may be applied for one or more of the following purposes:

1. Aid in more accurate nitrogen management decisions and increase nutrient efficiency.
2. Reduce nitrogen losses from crop fields and protect water quality.
3. Increase crop yield.
4. Economic savings

**CONDITIONS WHERE PRACTICE  
APPLIES**

This practice applies where:

1. Fields have received manure within the last three years
2. Manured fields received commercial fertilizer (pre-plant or pre-emergence) at rates less than 40-50 pounds per acre

3. Corn measures 10-12 inches tall from the ground surface to center of the whorl (approximately V5 to V6).

**CONSIDERATIONS**

The pre side-dress nitrate test (PSNT) is only recommended for use on crops to which manure/litter has been applied. This is an early-season assessment of nitrogen availability.

The PSNT is most accurate for “typical” growing seasons and its accuracy is reduced in very wet or dry years.

When interpreting PSNT results, follow nitrogen application recommendations for Delaware and not those for other regions that have different soil characteristics.

**CRITERIA**

**Materials**

Sample collection and preparation procedures for PSNTs are very different than those for routine soil tests. Collect 15 to 20 soil cores from each field (where fields are 20 acres or less) The large number of cores is important due to non-uniformity of manure application. Cores should be collected to a depth of 12 inches and taken from the center of planting rows to avoid any starter fertilizer bands. Combine the cores and mix thoroughly in a bucket. Spread a 1-2 cup subsample to ½ inch or less on newspaper in a warm, dry place and allow to dry (this process minimizes changes in soil nitrate level prior to analysis). If drying cannot be initiated within 1 hour of collection, the sample should be stored on ice in a cooler or refrigerator until it can be properly dried. Place dried samples in a plastic bag and submit to laboratory for testing.

### **Interpretation of Results**

Taking together PSNT test results and the amount of starter nitrogen and poultry litter applied to the field, the amount of nitrogen that should be applied to the crop at sidedress to achieve realistic yield goals can be calculated. PSNT test results can be used to determine the need for additional nitrogen while minimizing the potential for leaching to groundwater from over-fertilization.

### **REFERENCES**

1. Shober, A.L., K.L. Gartley, and J.T. Sims. 2013. Nitrogen Management for corn in Delaware: The Pre-Sidedress Nitrate Test. University of Delaware Cooperative Extension Fact Sheet: <http://extension.udel.edu/factsheets/nitrogen-management-for-corn-in-delaware-the-pre-sidedress-nitrate-test/>