

How to take a PSNT soil test

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The Pre-Sidedress Nitrate Soil Test (PSNT) is most widely used in field corn production, but is adaptable for use in other field crops and vegetables. The PSNT is useful for determining how much N is available in the soil just prior to sidedressing. Soil microorganisms are continually feeding on organic matter and crop residues in the soil. Nitrogen is released during this process and becomes available to the plants. This nitrogen can be measured and used as a credit against the total N requirement of the crop.

Timing: Take the soil test about 5-14 days ahead of sidedress. Samples taken too early will not be as accurate since the soil is releasing nitrate continually in the spring. Waiting until close to sidedress applications will allow the most accurate test of plant available nitrogen. The 5 to 14 day sampling window allows adequate time for the sample to be collected, analyzed and the result returned to the farmer in time to determine the nitrogen sidedress rate.

Priority Fields to Test: Test fields that will be corn or other high nitrogen demand crops. Test fields that have been manured this year or last year and fields that were alfalfa, clover or beans in 2003. These rotations will provide the greatest chance of nitrate credits.

Cautions: The PSNT will not be accurate in measuring soil nitrate if fertilizer nitrogen has already been applied, such as plowed down, large amounts broadcast at planting or with pre-emerge herbicides. Nitrogen placed in a starter band can be avoided during sampling whereas broadcast applications cannot.

Taking the sample: Soil samples should represent no more than 20 acres. The sampled area should be consistent for past crop, soil types and manure applications. Probe the soil 12" deep, taking 15-20 cores per field. Avoid probing through the starter band. If fields have significantly different soil types (dark soil in the low spots or sandy knobs) sample these areas separately. The PSNT in Michigan is based on the nitrate content of the top two feet of soil. It is recommended that soil cores be taken to a depth of 12 inch. The nitrate content of the 13 to 24 inch depth is estimated based on the content of the top 12 inches.

Handling samples: Do **not** put damp soil samples in plastic bags. Keeping the samples moist and warm causes mineralization to continue, inflating the nitrate level and resulting in low sidedress rates that may hinder yields. Mix the soil cores as completely as possible and take out one pint of soil to be dried as quickly as possible. Laying them out flat on newspapers to air dry is sufficient. Drying the soil stops microbial activity. If the soil samples cannot be dried right away, keep them cool, less than 50° F is preferred.

Delivering samples to the Lab: If at all possible, deliver samples to a soil testing lab. This speeds up results over mailing samples. If soil will be mailed, be sure it is dry and use express shipping methods allowing extra time between sampling and sidedress time.

Using the MSU Soil and Plant Nutrient Lab: Cost for nitrate soil samples is \$9/sample, plus one dollar if you have all the samples faxed rather than mailed, which is encouraged. The fee must accompany the samples. The lab is open 8-5, Monday through Friday. For sample bags and forms, contact your local MSU Extension office. Other commercial labs are also available.

Expected return for your time investment: If you can soil test 300 acres in 6 hours and find a nitrate credit of 100 pounds per acres, (100 lbs./A is typical on manured fields) that could mean a \$7,500 savings for your time. Think about it!