UMassAmherst

Extension Soil & Plant Nutrient Testing Laboratory

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USE THIS FORM FOR PRE-SIDEDRESS SOIL NITRATE TEST (PSNT). See page 2 for Sampling Instructions and Description of Services. Send your sample(s), completed order form and payment to the address listed above. **Enclose check payable to "UMass" for $15 per sample.**

Main Contact:	**Send Copy to:**	**Method of receiving results:**
Name:	Name	
Business Name:	Business Name:	**US Mail** *(Please include $2 per order for postage & handling.)*
Street Address:	Street Address:	
City, State, Zip	City, State, Zip	**Email**
Phone:	Phone:	
Email Address:	Email Address:	

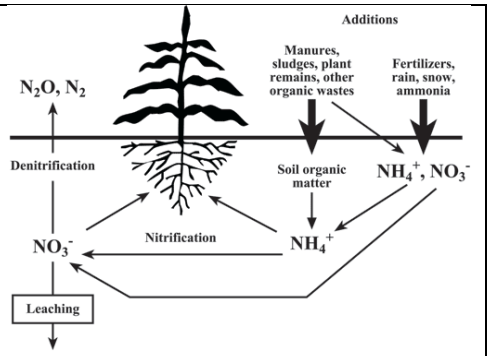
LAB # (Leave blank)	**SAMPLE ID** (You create this)	**Crop**	**Expected Yield** (include units)	**Previous Crop or Cover Crop**	**Manure or compost applied in spring? (yes or no)**

Order Total $_____.

Office Use Only	
Received	Due
Check #	PO#
Cash	Date

Samples should be submitted to the lab ASAP. Improper handling **can and will** affect results. PSNT samples are the only samples that **can** be hand-delivered inside the lab. If samples are brought to the lab immediately they do not have to be dry, but should be kept cool. All mailed samples must be dried prior to shipping for accurate results.

The Pre-sidedress Soil Nitrate Test (PSNT)



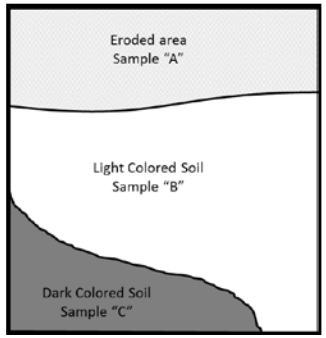
Nitrogen is essential to nearly every aspect of plant growth. The nitrogen cycle is extremely dynamic and, as illustrated in the figure to the right, its behavior in soil is complex. Regardless of the form of nitrogen originally in or added to the soil, it undergoes many changes which determine whether it will become available to the crop, primarily as nitrate, or lost to the environment.

More than 90 percent of the total nitrogen in soil is unavailable because it is tied up in organic matter. Mineralization of organic N (conversion of organic N to inorganic N) is carried out by soil microorganisms and is extremely sensitive to soil moisture and temperature. Therefore, weather has a dramatic influence on the rate of mineralization and potential loss of available N. For these reasons, routine pre-season soil testing is not useful in humid environments for predicting nitrogen availability during the season.

Under certain conditions, in-season soil nitrate testing can be useful for predicting sidedress fertilizer N needs for a several crops in the northeast. The Pre-sidedress Soil Nitrate Test has been shown to successfully predict the need for sidedress fertilizer N for sweet corn, field corn, pumpkin, winter squash, and peppers where compost or manure has been applied, the previous crop was a legume, and/or the soil has a high level of organic matter. The test works best when pre-plant and starter fertilizer N rates are less than about 50 lbs. N per acre.

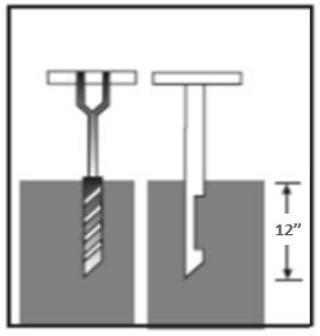
Interpretation of results from the PSNT is crop specific. For example, research in the Northeast has shown that when the soil nitrate level is above 25 ppm there is rarely an economic response to the application of sidedress fertilizer N to sweet corn and field corn. For pumpkin, winter squash, and peppers the threshold is around 30 ppm. Below the threshold levels, increasing amounts of sidedress fertilizer N are recommended. As with all soil testing, information from a PSNT should be used along with the grower's experience and knowledge of the field to determine the appropriate fertilizer application rate.

PSNT Soil Sampling Instructions



The most critical step in soil testing is collecting the sample. It is important that you take the necessary steps to obtain a representative sample; a poor sample could result in erroneous recommendations.

- The first step is to determine the area that will be represented by the sample. Areas with different yield potential due to past management or differences in soil type should be sampled separately. It may be helpful to draw a map of the field and identify areas where you will collect samples.
- Samples should be collected about one week prior to the appropriate time for sidedressing. For field corn and sweet corn, samples should be collected when plants are 10- to 12-inches tall at the whorl. Using a clean bucket and an auger or sampling tube collect at least 15 to 20 soil cores to a depth of 12 inches. Avoid starter bands and atypical areas of the field.



- Next, break up soil cores, remove stones and plant debris, and **thoroughly mix** the sample in the bucket. Scoop out approximately **one cup** of soil to submit to the lab. Microbial activity can rapidly change the concentration of nitrate in warm, moist soils, so it is important to rapidly dry samples. Samples can be dried by spreading them in a thin layer on a sheet of non-absorbent paper. A fan set on low will help speed the drying process.
- Place the **dry sample** in a plastic zip-lock sandwich bag. Label each bag with your sample ID (e.g. field name). Hand deliver or mail your sample(s), completed submission form and payment to the address listed on the front. Enclose check payable to UMass for $15 per sample.

Results are generally available within 24 to 48 hrs. To ensure the timely turnaround of your Pre-Sidedress Soil Nitrate Test, soils should be dropped off at the Soil Lab Office, Room 106 Paige Laboratory. If you cannot make the trip to the lab, please send your order via UPS or FedEx, and email us at soiltest@umass.edu and let us know when to expect your package. Thank you!