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Pre-sidedress Soil Nitrate Test (PSNT) for Corn

Sample Submission Form

Contact information

Grower name:	Send copy to:
Business name:	Business name:
Street address:	Street address:
City, State, Zip Code:	City, State, Zip Code:
Email:	Email:
Telephone:	Telephone:

Sample information (attach additional pages if needed). Include payment of $10/sample.

Lab use only	Field or Sample ID	Expected yield[1] (**bu/A** or **T/A**)	Long-term manure history[2] (**Y**/**N**)	Cover crop[3] None (**N**), Legume (**L**), Grasses (**G**), Brassica (**B**) or Mixture (**M**)

[1]Expected grain (bu/A) or silage (T/A) yield.

[2]Long-term manure history is defined as two or more applications in the previous five years, excluding the current year.

[3]Previous winter cover crop. Select: None (N); Legumes, such as red clover or vetch (L); Grasses, such as cereal rye or wheat (G); Brassicas, such as radish or mustard (B); or a Mixture of species types (M). Previous perennial hay crops such as alfalfa, grasses, or legume/grass mixtures that are terminated in the spring prior to corn planting should use 'None' as the winter cover crop type. Annual winter cover crops that contain multiple species of the same functional type (e.g., multiple species of legumes, or multiple species of grasses) are not considered mixtures and should be entered as the functional type legumes (L), grasses (G), or brassicas (B).

PSNT Soil Sampling Guidelines

The PSNT is only used to predict sidedress N needs on fields with a long-term manure application history (2 or more of the last 5 years with manure applied, not including the current year) and the application of preplant plus starter fertilizer N is less than 50 lbs/A. Recommendations based on PSNT may not be accurate on fields that do not have a history of manure application. Pay close attention to sampling details to assure accuracy. The largest errors in soil analysis originate from mistakes made during sample collection and preparation.

Soil Sample Collection Protocol

- Avoid sampling immediately after a rain event since water infiltration can move nitrate below the PSNT sampling depth.
- Take soil samples for the PSNT when the corn is 12 inches tall or at least a week before planned sidedressing.
- All soil cores should be collected to a depth of 12 inches. If that depth is not possible, sample as deeply as you can.
- Sample the fields by taking 10 to 20 cores at random locations to the 12-inch depth.
- Avoid starter bands and other atypical areas. If sampling fields where manure has been injected see the Penn State Extension Factsheet, *Pre-sidedress Soil Nitrate Test for Corn* (https://extension.psu.edu/pre-sidedress-soil-nitrate-test-for-corn) for modified sampling instructions.
- Combine all soil cores in a clean bucket or container to form a composite sample for each field or management area and follow sample preparation recommendations below.

Preparing Samples for Laboratory Submission

- Crumble soil cores and break up large aggregates. Discard rocks and visible pieces of organic matter such as roots. Thoroughly mix the remaining soil.
- Collect a single 1-cup subsample from the composite sample for laboratory analysis. Keep careful track of which samples are from which fields.
- To prevent N mineralization, it's important to dry samples promptly. Spread the sample in a thin layer and dry it (using the sun, a heat lamp, air dried or under a fan) immediately after collection.
- Place soil in a clearly labeled sample bag provided by the lab or place in a plastic zipper lock bag and ship to the laboratory as soon as possible. If shipping is delayed, refrigerate the samples to impede microbial N transformations and assure test results best reflect field conditions.
- Take the time to thoroughly complete all requested information on the sample submission form. Be sure to carefully label samples and paperwork consistently.
- If samples will be delivered to the lab in-person within a day of sampling, the soils can be maintained moist, but under refrigeration, such as in a cooler with icepacks. When dropping off fresh soil samples at the lab for the PSNT, make the lab aware the samples are for nitrate analysis so that we immediately dry the soil or keep it under refrigeration until drying is possible.