

Fertilization

Know Your Nitrogen

PSNT can help sweet corn growers determine the need for sidedress nitrogen applications.

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THE Presidedress Soil Nitrate Test (PSNT) can help sweet corn growers determine the need for sidedress nitrogen. This test provides information about the nitrogen- (N) supplying capacity of a soil.

The basis for the PSNT is measurement of soil nitrate-nitrogen ($\text{NO}_3\text{-N}$) concentrations at a critical growth stage for corn. In contrast to a traditional soil test, the soil sample is collected from the top 12 inches of soil when the corn plants are 10 to 18 inches tall. This is usually done about one week before sidedressing is planned. Sampling at this stage of corn growth allows for a more accurate determination of available nitrogen from the soil based on specific field conditions (especially useful on manured sites).

The PSNT allows time for nitrate-nitrogen to accumulate as the soil warms in the spring. The PSNT can also be used as a guide in making N fertilizer rate predictions.

When the PSNT indicates a soil test level of greater than 25 ppm $\text{NO}_3\text{-N}$, there is no response to sidedress nitrogen and no nitrogen is recommended. On soils that test less than 25 ppm, the PSNT can help as a general guide to adjust sidedress N application rates. It is important to emphasize that the test is based only on the concentration of $\text{NO}_3\text{-N}$ in ppm and not on the concentration of other forms of nitrogen such as ammonium (NH_4). The soil can be tested at any lab that provides accurate $\text{NO}_3\text{-N}$ levels in ppm within a short period of time (two to five days). Call your county cooperative extension office for more information on soil

labs or portable soil test kits that can be performed by the grower in the field.

The PSNT is especially useful on manured soils or other soils that may have accumulated mineral N that frequently can be identified with the test as having sufficient N. When manure was applied in research trials, an average relative yield of 96% was achieved compared to only 75% on nonmanured soils.

Start With Limited Acreage

It is suggested that sweet corn growers should initially use the PSNT on only a limited number of acres. Once sweet corn growers have experience and confidence in this new soil test they will probably want to expand use of the PSNT to additional acres, as has been the case among New Jersey field corn growers.

The PSNT gained widespread acceptance for use on field corn in the eastern U.S. The success of the PSNT on field corn encouraged us to test the PSNT for use in sweet corn production. Since 1991, replicated field trials to evaluate the PSNT have been conducted on sweet corn at 61 locations in New Jersey. The research sites were selected to represent a variety of soil and cultural conditions. This helped to establish critical levels for PSNT on sweet corn that would be applicable to the range of production conditions existing within the state.

Take Guess-Work Out Of Decisions

The PSNT can help take some of the "guess-work" out of nitrogen management decisions. Our research indicates that some growers (especially those using manures)



Soil samples for the PSNT should be taken when corn is 1 foot in height and should be collected from the centers of the rows using a soil probe that can extract 12-inch deep soil cores.

can skip a sidedress nitrogen application if the PSNT indicates adequate levels of soil nitrogen. It's also helpful to evaluate N availability (just before sidedressing) from N that was applied at planting time.

The PSNT provides a valuable management tool that can help growers save time and money and reduce the potential for nitrate contamination to groundwater. The PSNT can help vegetable growers continue their proud tradition as responsible stewards of the land by reducing excessive applications of nitrogen to sweet corn.

Follow procedures for the PSNT which are outlined in the Rutgers Cooperative Extension Fact Sheet 760 - *Presidedress Soil Nitrate Test (PSNT) Recommendations for Sweet Corn*. The fact sheet is free and is available by sending a self-addressed stamped envelope to Rutgers Cooperative Extension at 390 George St., 8th floor, New Brunswick, NJ 08901. Be sure to include return postage, address, and specify the fact sheet title. □

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