

Wisconsin's Pre-sidedress Soil Nitrate Test

What is it?

The pre-sidedress soil nitrate test (PSNT) is one of two soil tests available to corn growers for improving the efficiency of nitrogen (N) fertilizer applications. Use of the test allows corn N recommendations to be adjusted for the soil's nitrate content. Accounting for soil nitrate not only reduces fertilizer costs; it also reduces the risk of nitrate movement to groundwater due to N applications in excess of crop need.

Advantages

The PSNT measures the amount of N released from previous legume crops, manure applications, and soil organic matter in addition to a portion of the N carried-over from the previous growing season. The test can be a valuable tool for growers wanting to confirm N credits from manure or legumes.

Disadvantages

Corn growers using the PSNT are locked into applying any supplemental N as a sidedress application. Also, use of this test requires that soil sampling, laboratory analysis, and sidedress N applications all occur during a short period of time when a grower may be committed to other farm operations, such as cultivating, haying, etc.

Conducting a PSNT

Nitrate-N is more likely to accumulate in silt loam or heavier textured soils. The PSNT is not recommended on sands. Soil samples for the PSNT are collected to a depth of one foot when corn plants are 6 to 12 inches tall. Analysis of PSNT samples is offered by several commercial soil testing labs, as well as the University of Wisconsin labs in Madison and Marshfield. Nitrogen recommendations for corn based on PSNT results are shown on the reverse side of this card.

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Corn Nitrogen Recommendations Based on the Pre-sidedress Soil Nitrate Test (PSNT)

PSNT Result N (ppm)	Soil Yield Potential ¹	
	Very High/High	Medium/Low
	N Application Rate (lb/a)	
≥ 21	0	0
20-18	60	40
17-15	100	40
14-13	125	80
12-11	150	80
≤ 10	160 ²	120 ²

¹ To determine a soil's yield potential, consult the UWEX publication *Soil test recommendations for field, vegetable and fruit crops* (A2809), or contact your agronomist or county agent.

² No adjustment made to corn N recommendations.

Note: When corn follows alfalfa, the maximum N recommendation is 40 lb N/a for all PSNT results less than 21 ppm N.