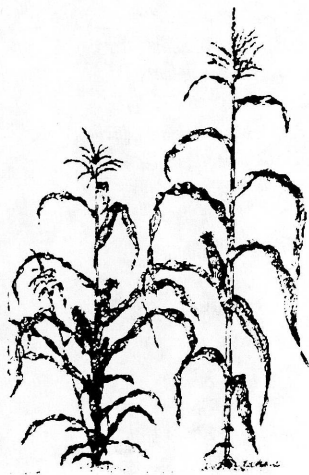


RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

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## Sidedress Nitrogen Fertilizer Decisions for Sweet Corn

*Joseph R. Heckman, Ph.D., Soil Fertility, Peter Nitzsche, Morris County Agricultural Agent, and William Hlubik, Middlesex County Agricultural Agent*

The amount of nitrogen to apply to sweet corn is an important management decision. Sweet corn is very responsive to nitrogen. When too little nitrogen is applied, sweet corn will readily show signs of nitrogen deficiency and lower yields of marketable ears. However, it is never profitable to apply more nitrogen than can be used by the crop. Also, pollution of water supplies is a concern from over-application of nitrogen.

The amount of nitrogen that will be supplied by a soil during the growing season is difficult to predict at time of corn planting. Nitrogen is sometimes over-applied at planting to guard against deficiency, without knowing how much nitrogen will become available from soil. Fortunately an effective method is now available to determine available soil nitrogen at the most critical growth stage for sweet corn growth. This new method is called Presidedress Soil Nitrate Testing (PSNT).

Sweet corn growers that delay most of the total nitrogen application to time of sidedressing (when plants are about 12 inches tall) can use the PSNT as a guide to improve nitrogen recommendations. This in-season soil test does a good job of determining whether there is adequate nitrogen available in the soil to meet the needs of the crop. The PSNT is especially useful on manured fields where it is generally expected that there should be adequate available nitrogen from the soil. The PSNT provides growers with assurance that sidedress nitrogen fertilizer rates can be reduced without affecting yield on soils that are high in available nitrogen (soils testing greater than 25 ppm NO<sub>3</sub>-N are considered adequate). On soils that test low in available nitrogen, the PSNT will indicate that sidedress nitrogen is needed.

Rutgers Cooperative Extension assisted commercial growers with the soil test in 1995. Soil samples were collected on 9 different farms from a total of 39.5 acres of commercially grown sweet corn. Nitrogen fertilizer recommendations were provided to the growers based on the results of the soil analysis for nitrate nitrogen (PSNT).

Morris County Agricultural Agent, Peter Nitzsche, worked with growers using the test on loamy soils and compared PSNT recommen-

SEE PSNT ON PAGE 2

## Cultural Notes

Stephen A. Garrison, Ph.D., Vegetable Crops

- Uneven tomato and pepper transplant growth in cell trays was observed last week. The pattern of symptoms characterized by light green-yellow leaves and reduced growth around watering sprinklers suggests overwatering and leaching of nitrogen. In other cases, symptoms were evident further from the sprinklers where water bounced off the plastic covering the house.

Check the water distribution patterns of sprinklers and adjust water pressure and sprinkler spacing to achieve uniform water distribution.

Avoid overwatering during cool, cloudy weather to reduce the chance of **foliar diseases**.

- Hold back transplants by withholding water until some wilting is evident. Avoid lowering temperature to harden tomatoes because recent research has shown that cool temperatures (60-65°F day and 50-60°F night) for one week increases **catfacing** and **rough blossom scars** on fruits from flowers pollinated 4 weeks after cold exposure. □

PSNT FROM PAGE 1

dations to the growers' usual practice. In ten different fields where the PSNT was used the average potential saving was 51 lbs. N/acre or the equivalent of \$14.10 per acre (Table 1).

Middlesex County Agricultural Agent, William Illubik, worked with growers using the test on sandy soils and compared PSNT recommendations to the growers' usual practice. In six different fields where the PSNT was used, more sidedress N was generally recommended than the growers' usual practice. In one field the PSNT recommendations decreased the sidedress N rate, and in one field there was no change from the grower's usual practice. On average the PSNT recommended 38 lbs. N/acre more than the growers' usual practice. In two fields where the PSNT recommended more sidedress N than the growers' usual practice, marketable sweet corn yield was increased 35% (Table 2).

In both counties the PSNT was shown to be a useful tool to help growers evaluate their nitrogen management practices for sweet corn. Soil samples collected from loamy soils in Morris County generally had higher PSNT values than samples collected from sandy soils in Middlesex County. The PSNT appears to be most useful for sweet corn produced on finer textured soils where organic matter contents are higher and significant concentrations of available N are more likely to be found.

The bottom line is that the PSNT test helps to improve farm profitability. Growers that reduce the amount of N fertilizer used to grow sweet corn will reduce the cost of production and growers that apply more N fertilizer when it is needed may improve crop yield and returns per acre.

The procedures for the PSNT are explained in a fact sheet available through Rutgers Cooperative Extension [FS760, Presidedress Soil Nitrate Test (PSNT) recommendations for Sweet Corn: RCE Fax info Line Document #4405 (see page 5)]. Sources of equipment and laboratories are listed in Fact Sheet FS799. □

**Table 1.** Morris County, Summary of PSNT Results, 1995  
Ten fields sampled, 30 acres total

PSNT <sup>1</sup> Values:	<u>Minimum</u>	<u>Maximum</u>	<u>Average</u>
	13	48	38
Average Sidedress N rates:	<u>lbs. N/acre</u>		
Growers usual practice	61		
PSNT recommendations	10		
N fertilizer savings	51		

Conclusion: Using PSNT recommendations reduced N application rates and produced the same yield of sweet corn.  
<sup>1</sup> Soils testing greater than 25 ppm NO<sub>3</sub>-N are considered adequate and do not need sidedressing

**Table 2.** Middlesex County, Summary of PSNT Results, 1995  
Ten fields sampled, 9 acres total

PSNT Values:	<u>Minimum</u>	<u>Maximum</u>	<u>Average</u>
	9	28	16
Average Sidedress N rates:	<u>lbs. N/acre</u>		
Growers usual practice	61		
PSNT recommendations	39		
N fertilizer use increase	38		

Conclusion: Using PSNT recommendations increased N application rates and produced 35% more sweet corn in two fields.

<sup>1</sup> Soils testing greater than 25 ppm NO<sub>3</sub>-N are considered adequate and do not need sidedressing