Nitrogen Management of Sweet Corn

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Research has shown that the concentration of nitrate-N in the lower portion of cornstalks at the end of the growing season is a good indicator of N status in corn showing optimal, sub-optimal or above-optimal supplies of available N. For maximum yield, researchers have found stalk nitrate-N concentration levels for field corn to be in the range of 0.5 to 2.0 g/kg (ppm) dry matter at or after physiology maturity of the corn. However, sweet corn is harvested at the early milk stage, so stalk nitrate-N levels would be expected to differ from those of field corn taken at grain or silage harvest.

Research in 2005 was commenced to examine the stability of nitrate-N sweet cornstalks. Previous work at this location had shown the range to be from 3.4 to 5.03 g/kg of nitrate-N for marketable ear number. In the previous study only one hybrid had been examined whereas in the present study 5 hybrids involving one standard hybrid, two sugar-enhanced hybrids and two super sweet types grown at three planting dates with four levels of N.

The relationship between lower sweet corn stalk nitrate-N concentration and relative sweet corn yield will be analyzed using a nonlinear (NLIN) regression procedure to fit a quadratic-and –plateau (QRP) model of relative sweet corn yield and corn stalk nitrate-N concentration.

Results are expected to help determine the stability of stalk nitrate-N across hybrids and seeding dates. However, our preliminary results suggest the levels change as the ear matures and that this may confound the results for sweet corn with its immature ear, whereas this is not a problem in field corn which is physiologically mature at harvest time for corn silage and grain.

Another useful tool for assessing nitrogen need of corn is the preside-dress nitrogen test. The soil sample is taken when corn is 12" tall to a depth of 12", and if the level of soil nitrate is above 25 ppm then the crop does not need any nitrogen fertilizer as a side or top-dress application. The high cost of nitrogen fertilizer increases the importance of developing useful decision aids for farmers.