NITROGEN fertilization management and soil nitrate use for sugar beet grown in Southern Minnesota.

Nitrogen fertilizer management continues to be paramount for efficient sugar extraction and top economic returns in Minnesota. A three year study was conducted to determine the effect of previous crop (corn or sweet corn), fall or spring N fertilizer application, N fertilizer application rates, and the use of a nitrate-N soil test for N fertilizer recommendation for sugar beet production. The study was conducted at ten locations; three in 1998, one in 1999, and six in 2000. Sugar beet root yield, sucrose concentration, and loss to molasses were measured while recoverable sucrose was calculated from these measurements. To improve the predictive ability of a nitrate-N soil test, soil nitrate-N concentrations were determined to a 120 cm depth from soil samples taken in November and April before the growing season. Residual nitrate-N at a depth of 120 cm were also taken following the sugar beet crop growth. The use of N fertilizer positively increased the yields and economic returns for sugar beet in 1998 and 1999. The use of current N fertilizer recommendations did not under fertilize sugar beets in 1998 or 1999. Residual nitrate-N after sugar beet production was not affected by time or rate of N application. The 2000 locations were harvested recently and the additional information from these location will be presented.