

MARTIN, SUZAN E. USDA, Agricultural Research Service, 1701 Center Avenue, Fort Collins, CO 80526 - Soilborne organic acids distribution and host-plant changes
Organic acids, some important intermediary metabolites and other characteristic components of physical by sugarcane (*Saccharum officinarum* L.), comprise about one-third of the non-sucrose components of physical sugarbeet extracts. I report the distribution of the major organic acids in the roots and petiole (surface layer) of four diverse sugarcane cultivars, and their changes through eight years of growth.

Doley, William P., American Crystal Sugar Company, Beet Seed Division, 1700 North 11th Street, Moorhead, MN 56560. - Field tests of glyphosate tolerant transgenic sugar beets in the Red River Valley.

Through our cooperation with Maribo Seed Intl of Denmark, American Crystal's Beet Seed Division conducted field tests of glyphosate tolerant transgenic sugar beets in 1993 and 1994. All transgenic lines provided by Maribo were developed using an *Agrobacterium*-mediated technique. Each transformation event inserts the transgenes in a unique position in the genome, and we refer to each family derived from a transformation event as a position type or positype. In both years, we conducted a small replicated yield trial and a nonreplicated demonstration trial, with allocation of positypes to the two trials based solely on seed availability. There were sprayed and non-sprayed plots of each positype in the yield trials, but only sprayed plots in the demonstration trials. The 1993 test near Hillsboro, ND, included 13 positypes, 4 of which were in the yield trial. Dramatic differences due to position effects were observed after application of 0.75 pt/A glyphosate. The response varied from no damage to killed. Four positypes (58, 59, 32, 33) in the demonstration trial had root yields exceeding the check. The 1994 test near Kindred, ND, included 6 positypes, 5 of which were in the yield trial. Transgenic lines in the yield trial were sprayed with either 0 or 1.5 pt/A glyphosate, while some plots in the demonstration trial were sprayed with 3.0 or 6.0 pt/A. Root yields of three positypes (19, 58, 77) sprayed with 1.5 pt/A glyphosate exceeded the checks. Neither root yield nor sucrose content of these three lines were reduced by glyphosate treatment. The level of expression of glyphosate tolerance is considered to be commercially acceptable, and positype 77 is now on track for commercialization.