

NARUM, JUDY A.^{1*}, SUSAN S. MARTIN,² and KENNETH H. CHAMBERS.³ ¹Beet Sugar Development Foundation, and ²USDA-ARS, 1701 Center Ave., Fort Collins CO 80526; and ³Holly Sugar Corporation, P.O. Box 1052, Colorado Springs CO 80901. - Sugars and impurities in *Beta vulgaris* cultivars after pile storage.

Differences among sugarbeet cultivars in ability to maintain high quality during storage are of interest to growers and processors. We followed biochemical changes in sugarbeets grown and pile stored at three factory locations, which had different environmental conditions. Six varieties were held for 110 days at location #1, five varieties were held for 90 days at location #2, and two varieties were held for 49 days at location #3. Samples collected at harvest and after pile storage were analyzed for pol sucrose; amino-N (ninhydrin); sodium and potassium (flame photometer); and "true" sucrose, raffinose, glucose, fructose and betaine by HPLC. Pol sucrose was higher in all samples than "true" sucrose. Significant differences were found among varieties for ability to retain sucrose during storage. After storage, "true" sucrose decreased by 1.94 to 5.18 (% of fresh weight) in the varieties tested at location #1, and 0.11 to 0.86 in those at location #2. Small or no sucrose losses were found under the short-term storage at location #3. Post-storage raffinose, glucose, and fructose levels (g/100g LC sucrose) increased in all cultivars at all locations.

EIDE, J. D.*, G. A. SMITH, and C. A. WOZNIAK. USDA, Agricultural Research Service, P.O. Box 5677 - University Station, Fargo, ND 58105 - Isolation of *Agrobacterium tumefaciens* from *Beta vulgaris* for enhanced transformation of sugarbeet.

Transformation of sugarbeet, *Beta vulgaris* L., with *Agrobacterium tumefaciens* is the most promising method for insertion of foreign genes into the sugarbeet genome. The number of virulent strains of *Agrobacteria* for use in sugarbeet is limited. In a search for compatible gene vectors, *Agrobacteria* were isolated from homogenized sugarbeet crown galls. Samples of serial dilutions were plated on selective media D1 or New and Kerr with or without 65 units ml⁻¹ bacitracin and 30 µg/ml streptomycin. Isolates that tested positive for 3-ketolactose were tested for virulence on sugarbeet seedlings and petiole sections. Those strains showing the greatest virulence will be candidates for disarmament and incorporation into our sugarbeet transformation program.