

MARTIN, SUSAN S.¹, and JUDY A. NARUM², ¹USDA, Agricultural Research Service, 1701 Center Ave., Fort Collins CO 80526 and (formerly) ²Beet Sugar Development Foundadion, Denver CO 80206. - Sugars and impurities in peel and interior of *Beta vulgaris* roots: changes under short-term, high-quality storage.

We determined the biochemical changes occurring in four sugarbeet lines at 2, 4, 6, and 8 weeks after high-quality harvest and storage. Sugarbeets were hand-harvested and stored at 4C and nearly 100% R.H. At harvest and at each sampling time, whole root, peel, and peeled interior samples were analyzed for sucrose, glucose, fructose, raffinose, betaine, sodium, potassium, and amino N. At harvest, samples of the same lines were placed in a factory pile for 8 weeks of good pile storage conditions, then analyzed similarly. Through 8 wks of 4C storage, root and peel sucrose (% fr wt) declined by 11% and 29%, respectively; this largely was due to hydration under the highly humid storage conditions, as root and peel sucrose losses in % dry wt were 1.1% and 14%, respectively. After 2 wks of storage, raffinose, glucose, and fructose concentrations were significantly above at-harvest levels; only raffinose continued to increase through 8 wks. At each sampling period, peel concentrations of raffinose and invert sugar (glucose + fructose), expressed per unit of sucrose present, were approximately 4-fold and 15-fold, respectively, their whole root levels. No other measured component changed significantly through 8 wks. Pile stored samples showed an average gain in sucrose as % fr wt, but this was due to dehydration as % dry wt sucrose losses were 3.8% and 12% for whole roots and peel, respectively. Peel levels of raffinose and invert in pile stored samples were approximately 2.5- and 5-fold those of the corresponding whole roots.