SAUNDERS, JOSEPH W.*, WILLIAM P. DOLEY, GEORGE ACQUAAH, and M. H. YU. USDA, Agricultural Research Service, Crop and Soil Science Department, Michigan State University, East Lansing, MI 58824 and USDA-ARS, 1636 E. Alisal St., Salinas, CA 93905. - Isoenzyme fingerprinting and in vitro shoot multiplication in *Beta lomatogona* Fisc. et Mey.

The apomixis existing within *Beta lomatogona* Fisc. et Mey. might be useful in development of true-breeding high-performance hybrid sugarbeet cultivars if it can be transferred into *B. vulgaris* L. and harnessed in breeding programs. We studied isoenzyme fingerprinting and in vitro propagation as tools to identify apomictic and interspecific progeny and to clone individual genotypes, respectively. Variation among six accessions was seen with malate dehydrogenase (MDH), isocitrate dehydrogenase, shikimate dehydrogenase, phosphoglucomutase, and phosphoglucoisomerase, but not with 6-phosphoglucose dehydrogenase. One accession had a unique MDH pattern. Some patterns were different from those found in sugarbeet. In vitro multiplication of shoots of three accessions was achieved, starting with floral stalk axillary buds and using 6-benzyladenine as the sole growth regulator. 3.0 mg/L was the optimum concentration for overall shoot enlargement and multiplication. This is 10-fold higher than routinely found for sugarbeet. This research indicated that isoenzyme fingerprinting and in vitro shoot multiplication could be used in genetic studies with *B. lomatogona* and, presumably, with interspecific hybridization derivatives with sugarbeet.

NARUM, JUDY A.[1]*, and SUSAN S. MARTIN.[2] [1]Beet Sugar Development Foundation, and [2]USDA-ARS; 1701 Center Ave., Fort Collins CO 80526. - Sugars and impurities in peel and interior of *Beta vulgaris*: changes under high-quality storage.

Two major factors are important in loss of sucrose from sugarbeets during pile storage: respiration, and biochemical conversions to compounds such as invert sugar and raffinose. As part of a broader investigation of peel biochemistry, our objective in this study was to determine the rate of loss of sucrose and changes in other impurities in the peel *versus* peeled interior of sugarbeets harvested and held under nearly ideal conditions. Sugarbeets from commercial, smooth root, and experimental varieties were stored at 4°C and nearly 100% humidity. Whole root (RT), interior (IN), and peel (PL) samples were collected at harvest and after 8, 16, and 24 weeks of storage. Biochemical changes were monitored by analyzing aluminum-clarified sucrose filtrate samples for pol sucrose; sodium and potassium (flame photometer); amino-N (ninhydrin); weight loss on drying; and "true" sucrose, glucose, fructose, raffinose, and betaine (HPLC). At harvest, "true" sucrose comprised 14.71%, 14.78%, and 3.01% of RT, IN, and PL fresh weight, respectively; these levels decreased to 12.33% (RT), 12.82% (IN), and 2.22% (PL) after 24 weeks. During high quality storage, mean raffinose content (g/100 g LC sucrose) approximately doubled in RT and IN, but increased 3½-fold in the peel.