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Diversity among older USDA sugarbeet germplasm releases was examined to gain insight on genetic diversity and the effect of breeding on the loss or gain of diversity over time. Accessions were chosen from the major breeding stations contributing to the U.S. germplasm pool and their presumed ancestors from Europe, including representatives for the wild forms *Beta vulgaris* ssp. *Maritima*. Using 69 polymorphic RAPD fragments for gene frequency analysis, heterozygosity was determined within and among groups of accessions related either by release date, breeding station or simply-inherited agronomic characters for monogerm seed and restoration of fertility in a cytoplasmic male sterile background. In general, heterozygosity within releases declined with time but total genetic diversity in the U.S. germplasm pool remained constant. Breeding for the agronomic characters had a marked influence in reducing diversity.