

THEURER, J. C., USDA, Agricultural Research Service, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI, 48824-1325. - A comparison of different types of smooth root and "soil free" sugarbeets.

Field experiments were conducted for three years to compare growth characteristics and agronomic performance of sugarbeet genotypes differing in taproot architecture. Genotypes were MH E4, and ACH 176 or ACH 185, commercial hybrids with standard grooved taproots; SR 87, a conical-shaped smooth root (SR) line developed at East Lansing, MI; MM90, a globe-shaped SR experimental triploid hybrid from the Netherlands; and Univers, a European low soil tare variety. In 1992, MM90 produced 42 gm/plant dry matter compared to 75, 106, 108 and 121 gm for Universe, SR 87, MH E4, and ACH 185, respectively. MM90 had more root growth above ground than other genotypes. Averaged over years, root yield for SR 87 was 35.65 tons/acre, significantly greater than the 31.57, 32.29, 27.85, and 29.38 tons/acre for MM90, Univers, MH E4, and ACH 176, respectively. Sucrose percentage for SR87 (15.31%) and MM90 (14.50%) was 1 - 2% lower than for commercial varieties. SR87 was equal to the commercial varieties in recoverable sucrose per acre. There was little difference among the genotypes in clear juice purity. MM90 had 50% of the quantity of soil adhering to taproots as did SR87 and Univers and about 25% of that of commercial standard grooved root varieties. SR 87 had higher root yield, sugar yield, and sucrose percentage than MM90. Globe-shaped roots of MM90 were harvested with significantly less soil than conical-shaped SR beets.