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Fertilizer N management for high-yielding, fall-planted sugarbeets in the Imperial Valley

Average sugarbeet yields have increased by 30 % or more in California in the last decade. They are highest in the Imperial Valley (IV). Current yields exceed those used previously as a basis for existing fertilizer management programs. A N management trial was carried out during 2003-2004 in the IV to quantify sugarbeet response to different rates (0 to 290 lb/ac) and timing of fertilizer N. Beets were harvested monthly from January through July, and dry matter accumulation, root and sugar yields (April to July), and plant N content were determined. The two most commonly used varieties in the IV were compared (SS Phoenix, Beta 4430). A second objective was to correlate changes in petiole N levels in controlled experiments in plots with those in growers' fields, to help guide late season N management. Petiole samples were collected in plots and additional petiole samples were taken in four different field locations selected to be representative of the soil types and management practices found in the IV. Optimum N fertilization levels depended on the time of harvest, but highest root and gross sugar yields (75 t ac⁻¹ / 22,000 lb ac⁻¹) were achieved at approximately 200 lb N ac⁻¹ in both June and July harvests. Fertilizer optima were lower for April and May harvests. There were no significant dry matter or root yield differences between the two varieties. Current sugarbeet varieties did not need greatly increased amounts of N fertilizer to achieve record root and sugar yield levels.

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