

## 2.16 KATHARINA SCHNEPEL, CHRISTA HOFFMANN

Institute of Sugar Beet Research, Holtenser Landstr. 77, D – 37079 Göttingen

### **POTENTIAL YIELD OF SUGAR BEET AT EXTENDED GROWING PERIOD**

#### **ABSTRACT**

Autumn sown sugar beets (winter beets) are expected to yield markedly higher than spring sown beets. This requires a continuous growth during an extended growing period. The objective of this study was therefore to analyse yield formation and sugar storage of sugar beet plants during an extended growing period. Pot experiments were carried out in the greenhouse with 11 sowing dates spread over the years with sequential harvests. The oldest plants were grown for 859 days. Root fresh matter yield continuously increased till the latest harvest, whereas the sugar concentration reached an optimum value and then decreased with time. The results provided some evidence that the sugar concentration of the storage root is limited by the sink capacity, which in turn controls the source activity by a feedback regulation of photosynthesis and leaf formation. The dry matter composition of the storage root changed towards lower sugar concentration, but higher concentration of cell wall compounds (marc). The sugar yield still increased beyond a time period at which winter beets will probably be harvested in practice. Hence, the theoretical yield increase of autumn sown sugar beets can be realized, provided that the plants show sufficient winter hardiness and bolting resistance.

---