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Exploiting the genetic potential of sugarbeets.

ABSTRACT

The world record of 21,140 pounds of sugar per acre, reached near Brawley, CA, USA is an indication of the genetic potential of marketed varieties grown under optimal conditions. The negative correlation between sugar content and yield as well as the impact of pests and diseases on the crop create the major bottlenecks for yield. With fewer and fewer sugarbeet specific agrochemicals being developed and with the increasing demand for environmentally friendly products, breeders have to invest more to keep this crop competitive. The recent development of Rhizomania and Nematode tolerant varieties are promising examples for breeding progress. Modern biotech tools enable breeders to exploit the genetic variation of genetic resources faster than in earlier times. Thus the gain from selection is increasing over time. After having achieved herbicide tolerant varieties breeders are now working hard on other objectives, one of which is to develop so called "winter-beet" varieties suitable for longer processing campaigns and for a much wider range of growing conditions; conditions which would cause 100% bolting along with frost damage to regular varieties. This type of winter-beets can only be achieved by transformation technology, which offers still additional opportunities with different priorities set by the individual breeding companies.