

## Effect of nitrogen rate and weed control treatments on quantitative and qualitative yield of sugar beet

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**Summary** The effect of nitrogen rate and weed control treatments on quantitative and qualitative yield of sugar beet was studied in 2015. This experiment was carried out following a split plot design with three replications. Factors were nitrogen rates as one and two times the recommended dose ( $200 \text{ kg N ha}^{-1}$ ) and Weed control treatments consisted of (1) a weedy check, (2) hand-hoeing twice, at 3 and 6 weeks after sugar beet emergence (WAE), (3) hand-hoeing three times, at 3, 6 and 9 WAE, (4) postemergence application of Phenmedipham + Ethofumesate + Desmedipham (PED) at 3 WAE + one hoeing at 6 WAE and (5) one hoeing at 3 WAE + PED application at 6 WAE. Increasing the amount of nitrogen reduced weed density, impure sugar and pure sugar content whereas it increased the root yield, sugar yield,  $\alpha$ -amino and sodium content.

Weed dry weight, sugar content in molasses, potassium content and alkalinity were all not affected by nitrogen amount. Results showed that the weed management treatments had a significant effect on all traits except sodium content and alkalinity. In the 'weedy' treatment, weed density and weed dry weight were 41% and 60% higher than in the other weed control treatments, respectively. Weed interference decreased root yield (62%), pure sugar content (35%), impure sugar content (31%) and sugar yield (76%). Overall, all weed control treatments improved root yield compared with the non-weeded check. However, highest root and sugar yields were obtained by hand hoeing three times at 3, 6 and 9 weeks after sugarbeet emergence.

**Keywords** Integrated weed management, herbicides, nitrogen, sugar beet, weeding.