CHANGING OF SUGAR BEET (*BETA VULGARIS* L.) QUALITY
ON THE EFFECT OF FOLIAR TREATMENTS

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SUMMARY

Sugar beet has an outstanding place among the plants, rentability of sugar manufacture is determined by the stability of yield and the quality (saccharose content) of sugar beet. The most important constituent of beet is certainly sucrose, while the various non-sucrose substances impair the sugar yield to different degrees.

In common with most crops, climate and soils are the two main determinants of yield per unit area. Both are outside the growers' control but next most important is the plant's nutrition, which can be manipulated to the advantage of producer and processor. The yield and the quality of the sugar beet are mainly determined by the plant production system, so we studied the effect of different foliar treatments.

Our plot experiment in randomised blocks in four replications was set up in Hajdúböszörmény (N 47°41' E 21°30'; elev above 368 ft) in 2005 (and in 2006 – under analysis) at two sites (Béke Agricultural Cooperative – 1st site and Hajdúböszörményi Agricultural Plc. – 2nd site) on chernozem soil. The soil is suitable for the sugar beet cultivation at both of the sites. Plot size was 24 m × 300 m.

The studied variety was Picasso on the 1st site and Liana on the 2nd site. The fore crop was winter wheat at both of the sites.

We examined the response of sugar beet to sulphur (Cosavet DF, 5 kg ha⁻¹), copper (Kelcare Cu, 0.5 kg ha⁻¹) and two foliar nutrients with high active agent (these were Biomit plussz, 4 l ha⁻¹; and Fitohorm Euro Öko Ökö Gyökérgumós, 4 l ha⁻¹) sprayed with 200 l ha⁻¹ water at both of the sites.

We have taken root- and leaf samples at 4 week intervals, starting at the beginning of July. The harvest of sugar beet was on November. We determined the weight of root in the field. The quality parameters (sucrose, potassium, sodium and alfa-amino N content) of the root samples was determined from filtrated beet brei, by an automatic beet laboratory system, called VENEMA in the Kabai Eastern Sugar Plc. Hungary. Sucrose was analysed polarimetrically, potassium and sodium were determined by flame-photometry and alpha-amino nitrogen was analysed by the fluorometric method.

Leaf samples were dried in an oven at 60 °C for 5 days, to obtain dry weights. Macro and micro element content were determined by ICP-OES. We come to the conclusion that the
average of the six treatments we measured similar values, than the Plant nutrition Institute Jena (adequacy quantity).

We have found that the crop- and the sugar yield were significantly influenced by the foliar treatments. It can be stated that fertilization increased the crop yield, while the quality parameters (as above) have not changed. This way the sugar yield significantly increased on the effect of different foliar fertilizers.