

Effect of Micro Elements Application Method on Monogerm Sugar Beet cv. Rasul Production

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Abstract

Nowadays the use of Micro elements due to increasing the quality and quantity of products is strongly suggested, but the method of application is a baffling question. In order to evaluate the reflection of *sugar beet cv. Rasul* in case of the application method of Micro elements, the experimental design was factorial based on randomized complete blocks with three replications during 1385 cropping season. The treatments included the type of Micro element in 5 levels : without the use of Micro elements (Control), ZnSO₄, MnSO₄, FeSO₄ and Boric Acid and the application method was evaluated in 3 levels : coated with the seed, soil application and foliar application. The foliar application treatments of examined units were performed with the 5 per thousand concentrations, during 2 steps, first in 8-10 and 14-16 leaf stage. The research was conducted in 2.5 m² of field to evaluate of characteristics, root yield, biomass, and harvest index, percentage of sugar and percentage of dry matter. The variance analyzing of the examined characteristics showed that the effect of Micro elements on the root yield characteristics, harvest index, percentage of dry matter and percentage of sugar was significant. The effect of the application method of Micro elements and interaction of examined factors was significant only in root yield characteristics and percentage of sugar. Based on the results, the application of Micro elements led to significant increasing in root yield, percentage of sugar, and percentage of dry matter, harvest index and biomass. The application method of these elements depend on the rate of profit is different, the use of Fe and Mn in foliar application form and the use of B and Zn in soil application form was showed higher root yield against other application methods. The access to high percentage of sugar was provided with the application of Fe in leaf application form and application of 3 other elements in soil application form. The highest root yield with Fe foliar application was equal 6.143 kg.m⁻² and the highest percentage of sugar with soil application form of Zn was equal 18.32%, which also provided the highest percentage of produced dry matter in root (19.44%). The application of Micro elements caused the increasing in harvest index from the minimum amount 53.85% to maximum amount 72.27% with the use of Mn. Therefore in sugar beet the application of Micro elements in each possible method can increase the product with high percentage of sugar, by increasing of the leaf area duration, photosynthesis power of plant and increasing the metabolically functions, so it will led to increase the quality and quantity of sugar and decrease the import of it.

Key words: sugar beet, micro elements, application method, root yield

sa2008_a0525