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DOES THE INCREASED YIELD OF SUGAR BEET INFLUENCE THE NUTRIENT UPTAKE?

ABSTRACT

The yield of sugar beet and internal quality increased considerably during the last 20 years. Reasons are breeding progress with increased yield potential, the change in root-top ratio and reduction of α -amino-nitrogen, potassium (K) and sodium (Na) in the roots. Furthermore, improved agricultural methods like higher plant densities and an appropriate fertilization were implemented into farmers practice. This led to the question of how the increased yield of sugar beet has influenced the nutrient uptake. Therefore, field trials were conducted in the area of Südzucker AG from 2010 to 2013 with fertilization treatments for nitrogen, potassium and sulfur (114 environments). The yield of roots and top were determined as well as the concentration of macro- and micronutrients. The nutrient uptake is defined by the amount of nutrients taken up in root and top of sugar beet at harvest time. The results are compared with earlier findings from field trials to sugar beets of Hessian state research center for agriculture (LLH – Landesbetrieb Landwirtschaft Hessen), and other results from literature.

The results show, that the N concentration in sugar beets has declined over a period of 20 years by about 25 percent. Despite of increasing yields of sugar beets the N uptake almost remained unchanged. This finding is also true for further nutrients like phosphorous, potassium and sodium.
