Physiology of Growth and Mineral Intake Of Sugar Beets

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Nutritional requirements of sugar beets pertaining to their optimal development under given environmental conditions were studied in 1947. During this year the following factors relating to the growth of sugar beets were investigated: Percentage of sugar in sugar beet roots, mineral composition of tops and roots (N, P, K, Ca and Na), top-to-root ratios of beets and the yield of sugar beets. Sugar beets were planted in plots treated with the following fertilizers: P, NP, M (manure), MK, MP, MN, MPK, MNK, MNP, and MNPK. All soil treatments and checks were used in three randomized replications. Chemical analyses and other growth determinations were made several times during the growing season beginning with the middle of July.

Although the variation in content of sugar, minerals, in top-to-root ratios and yield of beets planted in plots which received different treatments did not vary greatly, still the following trends could be detected:

1. Sugar beets grown in highly fertilized plots, on an average, had lower percentage of sugar than beets grown in check plots and those receiving partial fertilization.

2. Lower percentages of roots as compared to tops, on an average basis, occurred in beets grown in highly fertilized plots, where fertilization practically always included nitrogen, and the highest percentages of roots occurred in the checks and in those plots which were fertilized with only a single or a combination of two elements, practically always excluding nitrogen.

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