

NUTRIENT EXTRACTION IN SUGARCANE AS AFFECTED BY RATES OF N AND INOCULATION WITH DIAZOTROPHIC BACTERIA

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The objective of the study was to measure the extraction of nutrients in different compartments of the shoot of three varieties of sugarcane as a function of mineral N fertilization and inoculation of diazotrophs. The experiment was set up in a non-irrigated area in SalesOliveira, Brazil, on March 23, 2009, during the plant cane cycle. The experiment was a split plot with four replications. Three varieties of sugarcane were placed in the plot; the subplot six treatments consisted of a control (N0) and rates 30 (N30), 60 (N60) and 90 kg ha⁻¹ (N90); a combination of N fertilizer (0 and 60 kg ha⁻¹ N) and inoculation (I) was included, in which five species of diazotrophs were applied to the seed stalks. The subplot consisted of five 10-m long rows, spaced 1.5 m. The shoots were sampled 14 months after planting. The plant material was ground, homogenized and brought to the laboratory for determination of dry matter and concentration of macronutrients, except for the N30 treatments which was not included. Shoot N content increased with N fertilizer rate from 69.2 ± 5.5 kg ha⁻¹ (NO) to 109.3 ± 4.9 kg ha⁻¹ (N90); the inoculated control (82.1 ± 5.4 kg ha⁻¹) did not differ from the treatment with 60 kg ha⁻¹ N (92.8 ± 9.4 kg ha⁻¹), although the effect of inoculation was not clear when stalk yields were considered (results not shown). The extraction of N increased with the N rates in the straw (straw N = 0.05 + 8.5N, R² = 0.99), in the green leaves (GL_N = 13.5 + 0.09 N, R² = 0.99) and stem (stem N = 46.8 + 0.30N, R² = 0.99). The decreasing order of nutrient export was K > N > Ca > Mg > S > P.

Keywords: *Saccharum* spp, Nitrogen, BNF

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