

Association of diazotrophic bacteria with different rates of N-fertilizer in drip irrigated sugarcane

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An important challenge of modern agriculture is to increase food production and energy with minimal environmental impact. Thus, this study aimed at evaluating the efficiency of inoculation of sugarcane with a mixture of five species of diazotrophic bacteria as a way to reduce or eliminate the use of N fertilizer in this crop. The experiment was conducted at APTA - Centro Oeste Jau -SP, Brazil 22 ° 17 ' S and longitude 48 ° 34 'W. The cultivar used was SP80-3280 (third ratoon). The treatments consisted of three rates of nitrogen 0, 50 and 100 kg ha⁻¹ N-fertilizer, with (I) and without (NI) inoculation of diazotrophic bacteria, with four replications. Treatments were irrigated by subsurface drip irrigation which also carried the fertilizer N, split in 12 applications throughout plant development. A marked response to N fertilizer was observed: shoot dry matter yields were 20, 25, and 32 Mg ha⁻¹ with N rates 0, 50, and 100 kg ha⁻¹ N; the corresponding figures for stalk dry matter were 14, 17 e 22 Mg ha⁻¹. The inoculation with diazotrophic bacteria did not significantly (Tukey, p < 0.05) affect the response to N fertilizer or increase shoot or stalk yields under the conditions of the present study.

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