



# Visions for a Sustainable Planet

ASA, CSSA, and SSSA International Annual Meetings  
Oct. 21-24, 2012 Cincinnati, Ohio

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*Tuesday, October 23, 2012: 9:15 AM*  
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## ABSTRACT WITHDRAWN

Symptoms of metal toxicity are frequent in cultivated crops. In Brazil, most soils are acidic with often high contents of toxic aluminum. In addition, harmful levels of toxic chromium occur in some planted areas, chiefly as a result of tannery residue disposals and intensive use of pesticides. Boron might play a role in mitigating such problems, considering that Al and Cr tend to cause boron deficiency in plants, and that the addition of B can alleviate stress caused by Al. Regarding chromium, increased boron supply results in a synergistic interaction in the root system. Therefore, the objective of this study was to evaluate the influence of pre-enriching in vitro culture medium with boron on growth and attenuation of aluminum and chromium toxicity of sugarcane seedlings. In vitro cultured sugarcane plantlets were treated with (1) ½ strength Clark's nutrient solution or (2) the same plus four times the recommended concentration of B. After 30 days, the seedlings were transferred to new solution with one of the following treatments: C: Control, pH 5.7, I: P- and Fe-free medium, pH 4.0, AL: I + Al<sup>3+</sup> (6.0 mg L<sup>-1</sup>), and CR: I + Cr(III) (5.0 mg L<sup>-1</sup>). After 30 days, plants were harvested for the evaluations. The statistical analysis revealed that AL and CR, with or without B pre-enrichment, were detrimental to plant growth. Root length was diminished by (2) in all treatments, as compared to (1), but C+2 and I+2 induced higher root and leaf DW, and (2) also favoured root ramification. Leaf FW and transpiration rates were increased by C+2. In conclusion, B pre-enrichment, despite not improving tolerance to Al<sup>3+</sup> or Cr(III), resulted advantageous for obtaining higher root branching and leaves biomass of in vitro-cultured sugarcane. Therefore, such strategy is recommended for providing rapid mass multiplication of sugarcane desirable genotypes.

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