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246-7

Toxic Effects of Chromium on the Physiology and Mineral Nutrition of Elephantgrass Seedlings

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A study was carried out to verify the effects of toxic chromium addition on the mineral nutrition of elephantgrass cv. Pioneiro at stage of growth. Newly propagated seedlings were exposed to aerated Clark nutrient solution containing 0, 1, 2, 3, 4 or 5 mg/L applied as chromium chloride, and were grown under controlled conditions. The solution was maintained at pH 4 or slightly low replaced every four days. After 30 days of continuous growth, plants were harvested and evaluated relative to physiological pa tissue mineral profiles as determined through ICP-AES analyses. Results showed that averaged plant growth rate, leaf area, ch content, and root length and dry weight (DW) were depressed nearly in proportion to the applied level of Cr(III). The ICP-AES p revealed severe reductions in Fe and Mg contents, in comparison to the control, as chromium levels were enhanced. Chromiun other essential elements were also evident, albeit less conspicuous. Leaves exposed to increasing levels of Cr(III) also respon exhibiting corresponding deficiency symptoms of Fe (yellowing) and Mg (blade yellow spotting, which rapidly turned into necros root DW was found as the best indicator of Cr(III) contamination under the studied conditions. Further research is needed, for t confirmation of the reported trends on different genotypes.

Back to Trace Elements, Heavy Metals, and Nutrients in the Environment (includes Graduate Student Competitior
Back to A05 Environmental Quality

Back to The ASA-CSSA-SSSA International Annual Meetings (November 4-8, 2007)