

## Antioxidative response of to sugarcane genotypes subjected to isolated and combined drought and root-chilling stress

Sales, C.R.G.1; Lagôa, A.M.M.A.1\*; Silveira, J.A.G.2; Machado E.C. 1; Ribeiro, R.V. 1; Machado, D.F.S.P1.; Machado, R.S. 1.

1-Laboratório de Fisiologia Vegetal "Coaracy M. Franco", Instituto Agrônomo (IAC), Brazil.\*Corresponding author: [alagoa@iac.sp.gov.br](mailto:alagoa@iac.sp.gov.br); 2- Departamento de Bioquímica e Biologia Molecular, Laboratório de Metabolismo de Plantas, Universidade Federal do Ceará, Fortaleza, CE, Brazil.

The aim of this work was to investigate the protective mechanisms against reactive oxygen species (ROS) in two sugarcane genotypes in initial growth phase, considered drought-tolerant (IACSP 94-2094) or susceptible (IACSP 97-7065), in response to drought and/or chilling stress. The experiment was carried out under greenhouse and the control treatment was conducted with the plant's root at 25 °C and adequate irrigation (25 H+). In the drought treatment, the plants root system was maintained at 25 °C, but with suspension of watering (25 H-), while the chill treatment, the root system was maintained at 15 °C with irrigation (15 H+). Finally, the two stresses were combined by imposing the root chilling treatment together with water deficit (15 H-). Measurements of lipid peroxidation in the leaves by assaying the content of TBARS, the total activity of superoxide dismutase (SOD; EC: 1.15.1.1), ascorbate peroxidase (APX; EC: 1.11.1.1) and catalase (CAT; EC: 1.11.1.6) were performed. There was a small increase of TBARS only for IACSP 94-2094, which was intensified when both stresses were applied simultaneously. The SOD and APX activities followed the same pattern of TBARS. IACSP 97-7065 presented no changes in any treatment considered. The CAT activity was low for both genotypes in all the treatments. The combination of the two abiotic stress intensified the drought effect and the temperature of 15 °C isolated was not enough to cause disorder in the oxidative metabolism of the available plants. It is concluded that the antioxidative enzymes activity is genotype-dependent and that there is a better protection against ROS by IACSP 94-2094, considered to be the drought-tolerant genotype.

*Supported by "BIOEN FAPESP 2008/57495-3, CNPq 565034/2010-3"*

This document was created with Win2PDF available at <http://www.win2pdf.com>.  
The unregistered version of Win2PDF is for evaluation or non-commercial use only.  
This page will not be added after purchasing Win2PDF.