

Leaf Dehydration Induces Different Content of Phenolics and Ferulic Acid in Drought-Resistant and -Sensitive Genotypes of Spring Triticale

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Z. Naturforsch. **64c**, 85–95 (2009); received June 16/August 27, 2008

Analyses of the total pool of phenolic compounds and ferulic acid, as a photoprotector of the photosynthetic apparatus, and the activity of L-phenylalanine ammonia-lyase (PAL), as a key enzyme in phenolics synthesis, were carried out. Measurements were performed on drought-resistant (CHD 12, CHD 147) and -sensitive (CHD 220, CHD 247) genotypes of spring triticale during flowering under increasing leaf water deficit. Additionally, the emission of blue and red fluorescence from leaves were estimated.

The exclusively in the resistant triticale genotype CHD 247 observed simultaneous increase in the content of ferulic acid and the total pool of phenolic compounds as a response to the leaf water deficit seems to be a promising biochemical indicator for a reliable selection of genotypes most resistant to drought stress. For the other genotypes, an increase in the total pool of phenolic compounds is accompanied by a decrease in the content of ferulic acid. An increase in the emission of red fluorescence, correlated with the high content of phenolic compounds, indicates the possibilities of these substances participating in the mechanisms of adaptation of the photosynthetic apparatus to water deficit in leaf tissues.

Key words: Triticale, Drought, Phenolics