

The evaluation of some physiological and biochemical variations of salt water irrigation tolerance in three canola genotypes

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Abstract

The study of biochemical and physiological variations under salinity stress conditions may provide a means to understand effective factors in salinity stress conditions. In order to evaluate the factors that affect salinity, this experiment was conducted in the greenhouse of Shahid Chamran University of Ahvaz during 2008-2009 growing season. This experiment carried out using a factorial test based on completely randomized design with four replications. The first factor (genotype) included Hayola 401, RGS0003, and Shiraly, and the second factor (salinity levels) had three levels of salinity (50, 100 and 150 mM) as well as distilled water as control conditions. Sources of salinity were NaCl and CaCl₂ with equal ratio applied until the end of the flowering stage. Salt stress caused decrease of shoot dry weight, osmotic potential, and RWC in all three genotypes. The results showed that total soluble sugars and SPAD value increased in 100 mM but decreased at 150 mM. Under salinity stress, proline content increased along with increasing of salt stress. Shiraly genotype had effective mechanisms to induce tolerance to salinity stress compared to the other studied genotypes. The results of correlation traits indicated that in all three salinity levels, decreasing of total dry weight increased SSI. In 100 mM, RWC showed negative correlation with SSI. There was a negative correlation between proline and osmotic potential in 50 and 100 mM. High accumulation of proline, more total dry matter, and RWC of leaves might be useful criteria for the selection of canola genotypes under salinity stress conditions.

Keywords: *Canola, Salinity stress, Genotype, NaCl, CaCl₂*