

Effects of Seed Priming on Some Physiological Traits of Safflower (*Carthamus tinctorius* L., cv. Goldasht) under Salinity Stress

A. Rahimi*, S. Zibai and H. Dashti¹

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Abstract

In order to evaluate the effect of seed priming on salinity modification of safflower (cv. Goldasht), a hydroponic experiment was conducted at Research Greenhouse of Vali-e-Asr University of Rafsanjan, Iran, in 2009. Priming treatments at 4 levels (no priming as control, and priming with distilled water, NaCl and Ca(NO₃)₂ for 24 hours) and salinity treatments at 4 levels (0, 8, 16 and 24 dS/m) were considered in a factorial experiment, based on complete randomized blocks design, with 4 replications. Results showed that chlorophyll content and K was significantly decreased with increasing salinity, while, proline, Na and Mg contents were increased with increasing salinity. Seed priming affected proline and Na contents and K/Na ratio significantly. The highest proline content (1.98 µmol/g fresh-leaf weight) was observed in NaCl pretreatment. The lowest Na (0.6%) and the highest K/Na (1.79) were observed in control and priming with Ca(NO₃)₂, respectively. Crop growth rate was reduced by 25, 33 and 55 percent in 8, 16 and 24 dS/m salinity levels, respectively, compared with control. It was concluded that proline and sugar content in shoots of this safflower cultivar increased in response to salinity, and seed priming with NaCl could modify salinity effects, especially net assimilation rate.

Keywords: Proline, Ionic relations, Growth indices, Chlorophyll, Soluble sugar.

1. Assis. Prof., MSc. Student and Assis. Prof. of Agron. and Plant Breed., Respectively, College of Agric., Vali-e-Asr Univ. of Rafsanjan, Rafsanjan, Iran.

*: Corresponding Author, Email: rahimiasg@gmail.com