

Effect of Seed Priming by Salicylic Acid and Paclobutrazol on some Agronomical and Physiological Traits of Parsley (*Petroselinum Sativum* Mill.) under Drought Stress

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Abstract

In order to investigate the effects of seed priming by salicylic acid (SA) and Paclobutrazol (Pa) on parsley, as a medicinal plant, under drought stress, a factorial experiment, based on completely randomized design with four replications, was performed at the Research Greenhouse and Laboratory of Department of Horticulture, University of Mohaghegh Ardabili. Experimental treatments included five levels of priming (seed priming by 100 and 200 mg/L concentrations of SA and 100 and 200 mg/L of Pa and control (no priming)) and three levels of drought stress (25, 50 and 100% of field capacity (FC) moisture content). Results showed that seed priming had significant effect on plant height, shoot and root dry weight, proline content, stomatal conductance and potassium content of parsley ($p \leq 0.05$). Seed priming by 100 and 200 mg/L SA increased plant dry weight by 14 and 8%, respectively, as compared to control. Seed priming by 100 and 200 mg/L Pa reduced plant dry weight by 1 and 11%, respectively, as compared to control plants. Drought stress decreased all vegetative growth traits of parsley. But, proline and soluble protein contents of leaves were increased. Maximum proline content of leaves (2.4 $\mu\text{g/g}$ fresh weight) was for 25% field capacity moisture content and the lowest proline content (1.06 $\mu\text{g/g}$ fresh weight) was observed for 100% field capacity moisture content. Seed priming by salicylic acid, having positive effect on growth and physiological traits, led to higher resistance against drought stress, as compared to Paclobutrazol.

Keywords: Soluble protein, Medicinal plant, Proline content, Stomatal conductance.

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