

عنوان مقاله:

Physiological and Biochemical Evaluation of Barley (*Hordeum vulgare* L.) under Salinity Stress

محل انتشار:

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خلاصه مقاله:

This study was conducted to investigate the response of four barley cultivars (Reyhan^۳, Yousef, Afzal, and Khatam) to salinity stress at ۰ (control), ۱۰۰, ۲۰۰ and ۳۰۰ mM levels as a factorial experiment, within the randomized complete block design in three replications in a greenhouse, using the Hoagland solution. The physiological and biochemical properties including dry weight and RWC, photosynthesis pigments, K⁺/Na⁺, osmotic adjustments (soluble sugars, glycine betaine, proline), hydrogen peroxide and antioxidants enzymes (catalase and peroxidase) in root and shoot of barley cultivars were evaluated in saline and non-saline conditions. To determine the relationship between growth performance and the physiological and biochemical properties, the correlation between the properties and causality analysis was examined. Results obtained from comparing the mean among the treatment combinations showed that the salinity stress reduced the dry weight, photosynthesis pigments, and K⁺/Na⁺, while it increased the soluble sugars, glycine betaine, proline, H₂O₂, catalase and peroxidase in the root and shoot of barley cultivars. Correlation analysis indicated that potassium in the shoot had the most positive and significant correlation coefficient ($r = ۰.۸۶$) with the dry matter of shoot. The stepwise regression analysis showed that the root dry weight, catalase of root and shoot, H₂O₂ of shoot and K⁺/Na⁺ of shoot contributed to the performance. Causality analysis revealed that the root dry weight, K⁺/Na⁺ of shoot, and catalase of shoot were highly important as they had a direct positive and significant impacts on the performance of shoot dry matter.

کلمات کلیدی:

.Antioxidant enzymes, Glycine betaine, H₂O₂, K⁺/Na⁺ ratio, Proline, Stepwise regression

