

عنوان مقاله:

Vascular Architecture Alterations in Expanding Durum Wheat Leaf Under Salinity

محل انتشار:

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خلاصه مقاله:

The leaf growth and cross-sectional area of durum wheat during its development may be reduced under salt stress due to vascular architecture alterations of leaves. A hydroponic experiment was conducted to compare growth rate and vascular architecture changes of two durum wheat cultivars including Shabrang and Yavaroos under 0 and 100 mM NaCl. Plants were sampled at the three-leaf stage growth. Results showed that under salt stress at 15 DAG, Shabrang with 0.69 mm/h had a greater elongation rate than Yavaroos (0.27 mm/hr). Likewise, under salt stress at 25 mm above the leaf base, 32 and 37% reductions in cross sectional area were observed in Shabrang and Yavaroos, respectively. In all treatments, maximum leaf width was obtained at the growth zone (25 mm above the leaf base). In both cultivars, the leaf cross-section of the control consisted of one midrib, 5 large veins and 11-21 small veins, while it composed of one midrib, 4 large veins and 3-12 small veins under salt stress. Overall, in both cultivars, comparison of control and salt stress treatments showed that the reduction in protoxylem area at 5 mm was greater than 100 mm above the leaf base. It can be concluded that the reduction in the cross-section of durum wheat is mainly correlated with a decreased number of small veins, and Shabrang cultivar with greater number and area of small veins along the leaf base had higher leaf growth and expansion rate than Yavaroos, when plants exposed to salt stress. This probably can explain why Shabrang cultivar might be more tolerant to salt stress than Yavaroos.

کلمات کلیدی:

Cross section area, Durum wheat, Elongation rate, Metaxylem, Midrib, Protoxylem Salinity

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