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EFFECT OF SILICON ON DURUM WHEAT GROWTH AND DROUGHT STRESS TOLERANCE

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Silicon (Si) has beneficial effects on durum wheat, mainly under biotic and abiotic stress. Silicon can affect biochemical, physiological, and photosynthetic processes and, consequently, reduce drought stress. In this study, the effect of silicon fertilization on the growth and drought tolerance of eleven varieties of durum wheat under water stress induced by polyethylene glycol (PEG). Experimental trial were conducted in hydroponic culture with four treatments (T1: non-stress, T2: non-stress + 150 mg / l (Si), T3: stress (200 g / l PEG) and T4: l PEG) + 150 mg / l (Si)). and chlorophyll index (SPAD), cell membrane stability (SMC), relative water content (RWC), fresh seedling weight (SW), vigueur Index (VI) and dry weight (DW) were determined. The results obtained revealed that the addition of silicon significantly improved ($p < 0.001$) the majority of traits measured on durum wheat, particularly in high concentrations (15 and 20 mg / l). Silicon increased SW, DW and VI by 25%, 21.42% and 143.12% when the Si concentration increased from 0 mg / l to 20 mg / l respectively. Thus, Silicon increased the SPAD values by 25.80% and decreased the electrical conductivity by 6.97%. In general, the results showed the positive effect of silicon on germination and the growth of durum wheat under water stress conditions.

Keywords: durum wheat, silicon, water stress

ABSTRACT