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Seed Germination of *Climacoptera crassa*, a potential native bedding plant, under Salinity, Drought and Heavy Metal Stresses

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Seed Germination of *Climacoptercrassa*, a potential native bedding plant, under Salinity, Drought and Heavy Metal Stresses

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Abstract

Abiotic stresses like drought, salinity and heavy metals are among the main factors which may hinder seed germination in plants in nature. Hence, in the present study the effect of different levels of drought, salinity and heavy metals on seed germination of *Climacoptercrassa*, a potential native species for bedding plant was investigated. Factorial experiment based on the Randomized Complete Design (RCD) with 18 treatments and 4 replications was performed. Salinity stress with Sodium Chloride (NaCl) in 4 levels (100, 300, 500, 700 mM), drought stress with Poly ethylene Glycol (PEG) in 5 levels (10, 20, 30, 40, 5 gr/L) and heavy metal stress with CdNO₃ and PbNO₃ in 4 levels (0.1, 0.5, 1, 2 mM) were applied. The results exhibited that all of the germination and seedling features but germination rate was negatively affected by increasing the level of the treatments. Germination rate was decreased when the seeds were exposed to the highest salinity levels of 700 mMNaCl 6.1%). The shortest shoot (0.3cm) was corresponded to 2 mMPb NO₃ while the smallest roots (0.3) obtained in 1mM CdNO₃. As results, *Climacoptera* seeds were more prone to heavy metals compared to salinity and drought stress. In conclusion, the seeds of *Climacoptercrassa* are able to germinate in sever conditions of drought and salt stress which make it a high potential candidate for utilizations in inappropriate conditions as bedding plant.

Keywords: Germination rate, Halophyte, Abiotic stress, Cadmium, Lead