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A Feasibility Study on the Germination of Three Euhalophytes Species under Deepwater Treatment in Laboratory Conditions

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Abstract

Fresh water is a scarce resource with a non-uniform distribution throughout the world. Deficit, scarcity and increasing demand, especially in arid and semi-arid countries, put a lot of pressure on water resources, and these countries are facing a harsh situation of water.Therefore, the first deep water well in the country was drilled in the Sistan plain, southeastern Iran. This study aimed to investigate the different deep water levels on the germination characteristics of three euhalophye range plantspecies i.e.*Halocnemum strobilaceum, Suaeda froticosa* and *Salicornia persica.* The experiment was conducted in a completely randomized design with ۴ replications and ۵ deep water levels (zero (control), ۲۵%, ۵۰%, ۷۵% and ۱۰۰%) in glass petri dishes with dimensions of ۹ cm in the laboratory conditions, Seed Germination indices including Germination Percentage, Germination Energy, Mean Daily Germination, Mean Germination Time, Germination Rate, Germination Vlue, Rootlet length, shootlet length, Seedling length and Seed Vigor Index were measured and the means were compared with Duncan's multiple range test at ۹۵% probability level.. The results showed that all three species were able to germinate at different levels of deep water. However, with increasing deep water concentration, all germination indices in all three species decreased. *Suaeda froticosa* had the lowest germination rate (۳۸%) and *Salicornia persica* had the highest germination rate (۴۸%). Changes in stem length increased with increasing deep water concentration in *Salicornia persica*species by ۰.۶% and decreased in saline and *Suaeda froticosa*species by ۰.۵ and ۳%, respectively, seed vigor index in *Salicornia persica*species by ۰.۳% and in *Halocnemum strobilaceum*species by ۰.۲% and s *Suaeda froticosa* pecies by ۰.۱% It has decreased with increasing water concentration. Only the species *Salicornia persica* was able to germinate in all concentrations of deep water and its germination did not stop.

Keywords: Deep water, Germination indices, *Suaeda froticosa*, *Halocnemum strobilaceum*, *Salicornia persica.*