

Studies on salt and drought tolerance of endemic and rare species of Valencian salt marshes as a tool for reintroduction programs

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INTRODUCTION

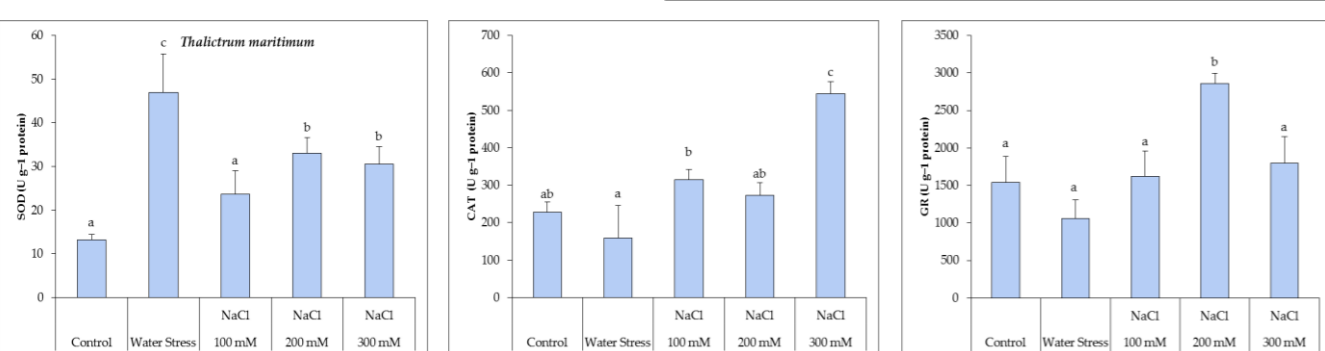
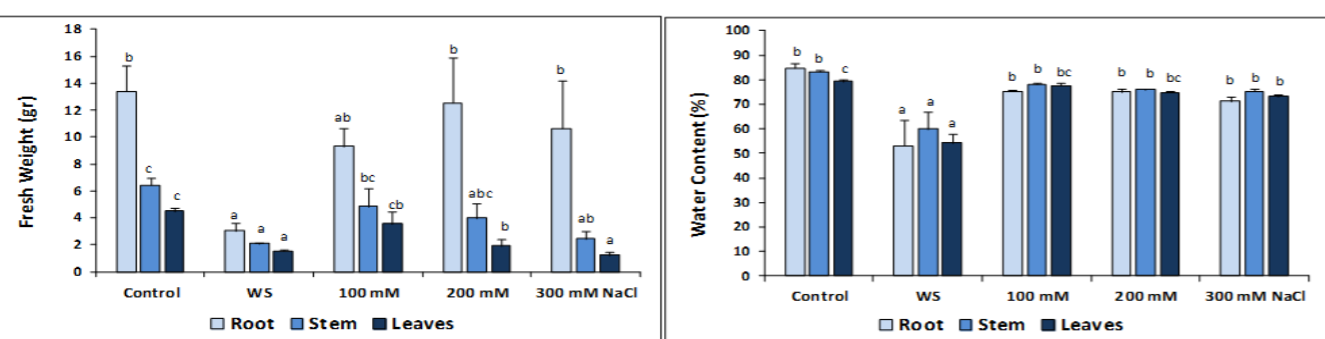
- Plant growth under **stress conditions** depends on the effectiveness of the **tolerance mechanisms** of each species.
- The strategy of conducting **comparative studies** in genetically related taxa with **different degrees of tolerance** is a valuable approach, especially for distinguishing the tolerance-relevant responses.

MATERIAL AND METHODS

- The study has been performed on 2 *Limonium*, 1 *Thalictrum* and 2 *Bupleurum* species.



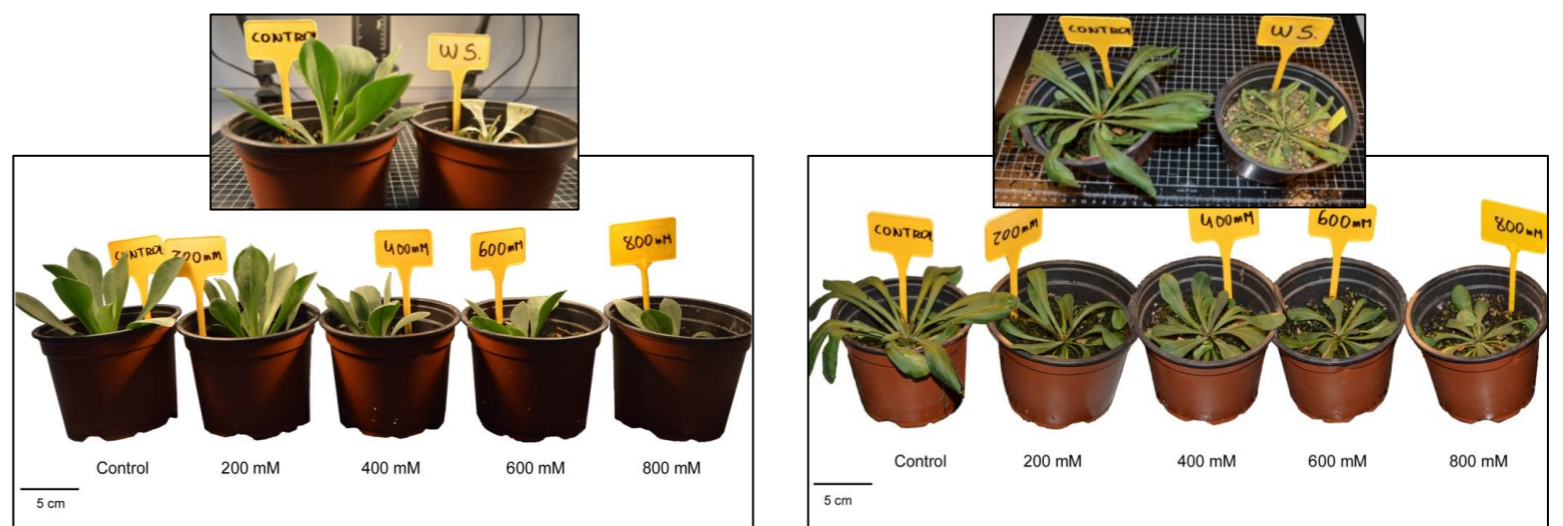
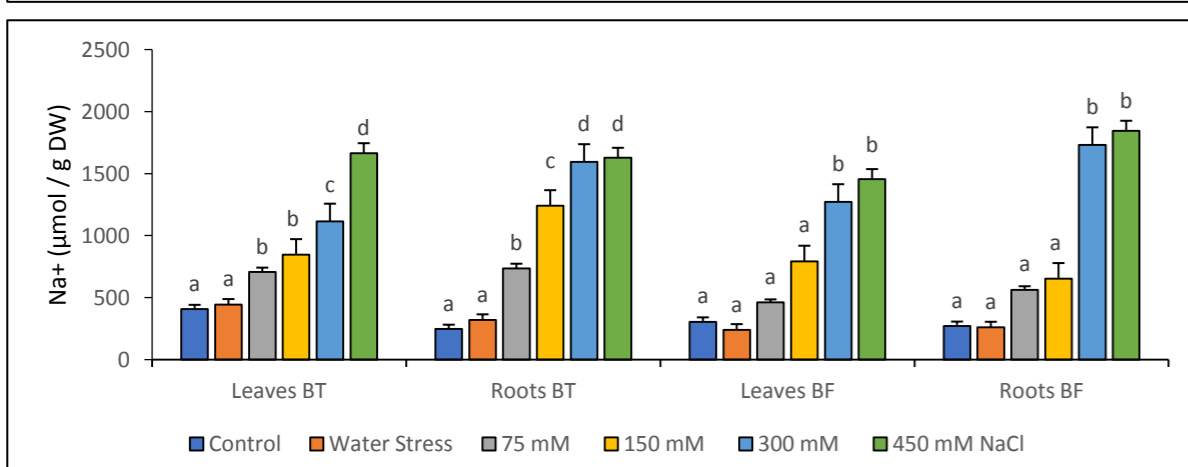
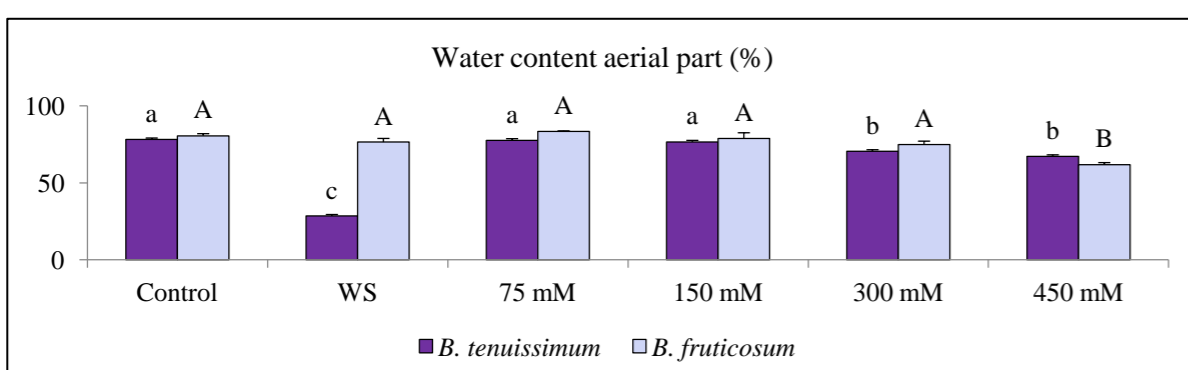
Thalictrum maritimum Dufour



Bupleurum tenuissimum L.

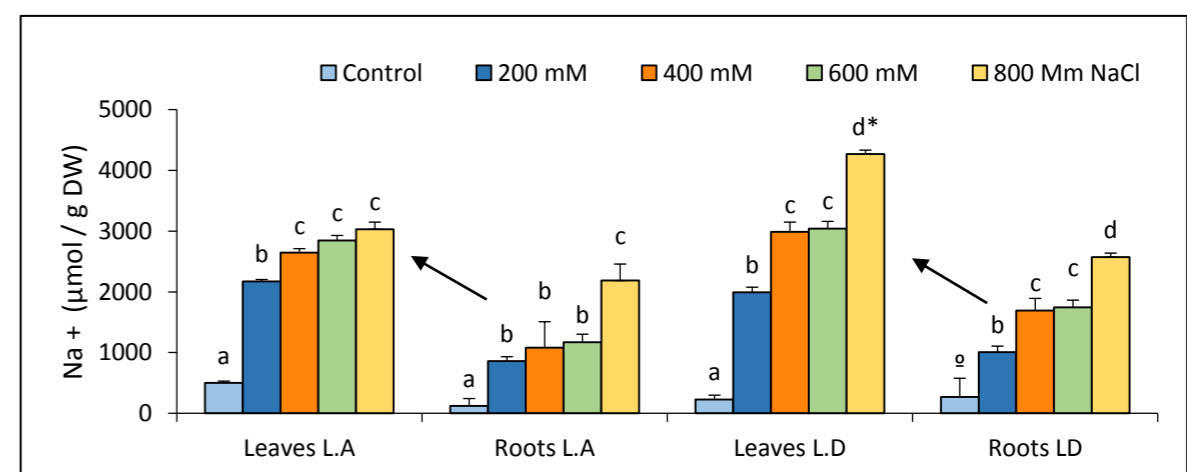


Bupleurum fruticosum L.



Limonium albuferae P.P. Ferrer y col.

Limonium dufourii (Girard) Kuntze



RESULTS AND DISCUSSION

- The data obtained indicated that **salinity is not a limiting factor** for the reintroduction of the two *Limonium* species of interest in l'Albufera Natural Park (Valencia, Spain), as **the two species tolerate much higher salinity under controlled conditions than those of their natural habitats**. However, water scarcity could be a problem for *L. albuferae*, while *L. dufourii* should not be introduced in areas prone to prolonged flooding.
- Analysis of the *Limonium* species suggested that their stress tolerance mechanisms are mainly based on ionic transport to the leaves along with synthesis and accumulation of compatible solutes.**
- Thalictrum maritimum* behaved as a moderate halophytic species, with optimal growth in the absence of salinity but tolerating concentrations much higher than those of its natural habitats.** However, it was shown to be sensitive to water deficit.
- The main mechanism of *Thalictrum maritimum* for salinity tolerance is related to the active transport of ions to the aerial part and the maintenance of K⁺ vs. increased Na⁺ in the leaves and the activation of enzymatic antioxidant systems.**
- Bupleurum tenuissimum*, a moderate halophyte, was shown to be more sensitive to water stress while *B. fruticosum* was more susceptible to salinity even at low concentrations.**
- Unlike the other species, in *Bupleurum* the main mechanism of resistance to salt stress is the prevention of foliar accumulation of toxic ions (Na⁺, Cl⁻).**

CONCLUSION

These data may help in the design and implementation of **conservation, reinforcement or reintroduction programs**, and for the management of threatened populations of these rare and endemic species.