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Richard D. Bardgett

Executive Editor of the editorial bord

Journal of Ecology

Covering letters are optional and should be used to provide additional information not present in the manuscript which is relevant for the editorial office or editors. Comment from webpage.

Dear Editorial Board,

I am pleased to submit our original manuscript entitled: **“Functional intraspecific variation in the base water potential for seed germination along soil microclimatic gradients”** by Clara Espinosa del Alba, Diana Cruz Tejada, Borja Jiménez-Alfaro and Eduardo Fernández-Pascual, to be considered for publication as a “Research article” in the *Journal of Ecology*.

For a long time, regeneration traits were overlooked in trait-based ecology, basically only considering seed mass to control for this dimension in the whole plant spectrum (REF?, Briceño 2015). Nevertheless, recent research has highlighted the importance of regeneration traits to explain an independent axis of variation (REF?, Hoyle 2015). In this study, we conclude that germination water thresholds are a functional trait with important consequences for individual phenology, reproduction, and fitness in water-limited ecosystems even at the microscale.

Our approach allowed us to integrate valuable and detailed environmental and regeneration traits information at the microscale and examine the results exhaustively. Our findings have large implications highlighting the adaptation potential of seed germination to both current and future climate scenarios. The functional intraspecific trait variation found could help buffer ongoing climate warming and be key to adaptation in water-limited ecosystems.

We are confident that our manuscript is of broad international interest and consider that fits the scope of the Journal of Ecology. Our manuscript has not been published, nor is it currently under consideration for publication, elsewhere. We would also like to clarify that all sources of funding have been acknowledged and that no ethical approvals were required for this research.

Thank you for taking the time to consider this manuscript.

Yours sincerely,

Clara Espinosa del Alba, corresponding author, on behalf of my co-authors.

Our study concludes that seeds have a great potential for adaptation to climate change. In our research, we integrated detailed microscale environmental data with an exhaustive subpopulation sampling. Results showed that germination water thresholds have important consequences for individual fitness and show functional intraspecific variation across a water availability gradient.

*Our study brings together authors from two different countries, including scientists based in the country where the study was carried out. The participant authors are in diferent stages of their research career including two PhD students, one univeristy professor and one PI. All authors were engaged early on with the research and study design to ensure that the diverse sets of perspectives they represent was considered from the onset. Whenever relevant, literature published by scientists from the region was cited; efforts were made to consider relevant work published in the local language.*