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Mediterranean trees vulnerability to climate change will not be minimized through hydraulic safety traits adjustments.

Myriam Moreno^{1,2}, Guillaume Simioni¹, Jean-Marc Limousin³, Jesus Rodriguez-Calcerrada⁴, Julien Ruffault¹, Hervé Cochard⁵, José Torres⁵, Sylvain Delzon⁶, Amélie Tournant¹, Pierre-Jean Dumas¹, Hendrik Davi¹, and Nicolas Martin-StPaul¹

¹INRAE, URFM, Avignon, France (myriam.moreno@inrae.fr)

²French Environment and Energy Management Agency, Angers, France

³CEFE, Univ Montpellier, CNRS, EPHE, IRD, Univ. Paul Valéry Montpellier 3, Montpellier, France

⁴Departamento de Sistemas y Recursos Naturales, Escuela Técnica Superior de Ingeniería de Montes, Forestal y del Medio Natural, Universidad Politécnica de Madrid, Spain

⁵INRAE, Université Clermont Auvergne, PIAF, Clermont-Ferrand, France

⁶INRAE, BioGeCo, Université de Bordeaux, Pessac, France.

Climate change in the Mediterranean region leads to an intensification of summer droughts. These episodes of extreme water stress threaten the survival of tree species and, by the same token, would affect the structure and ecosystem services of woodlands. Indeed, in conditions of prolonged and intense drought, one of the major risks for trees is the hydraulic failure due to high embolism level. Xylem embolism risk depends essentially on various leaf and hydraulic traits including (i) the vulnerability of their xylem to cavitation, (ii) the turgor loss point (a surrogate for stomatal control) and (iii) their cuticular transpiration (gmin). The two former traits can be used to compute hydraulic safety margins (HSM).

In order to assess whether trees will survive future climatic conditions, it is necessary to quantify and assess the plasticity of these traits to intensified drought. In this study, we used three rainfall exclusion experiments established in mature forests in south-eastern France (Font-blanche, Puéchabon and O3HP experimental sites) to measure these traits and evaluate their ability to adjust to aggravated drought conditions for three Mediterranean widespread species: *Quercus ilex*, *Quercus Pubescens*, and *Pinus halepensis*. We performed pressure-volume curves of trees from rainfall exclusion and control plots to see if adjustments of gmin and leaf hydraulic traits involved in stomatal regulation occurred in these three species. Using the optical method and cavitron, we also quantified the plasticity of xylem vulnerability to cavitation by comparing the values of water potential leading to a 50% reduction in plant hydraulic conductance (P50).

Our results show that *Quercus pubescens* has the lowest HSM while *Quercus ilex* has the highest. In addition, gmin is higher for *Quercus pubescens* than for the other two species. All together these results suggest that *Quercus pubescens* is the most vulnerable to drought among the three studied. Globally, for most traits and species no significant difference was found between treatments. The only exception was for *Quercus ilex* that exhibited lower turgor loss

point (Ψ_{tlp}) in the dry treatment. Drought acclimation for these species may rather depend on other traits, such as leaf area reduction or rooting depth. To integrate the role of these traits to estimate the historic and future mortality risk for these species, the use of hydraulic based models will be of interest.