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# There is no place like home? The impact of climate change on the litter decomposition: a Mediterranean forest case study.

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## Abstract

Leaf litter decomposition is known as one of the main key processes of turnover of nutrients and carbon in the forest ecosystem. The ecological theory of "Home Field Advantage" (HFA) predicts that this decomposition process seems to be faster in its environment of origin (at "home") than in a foreign environment ("away"). The decomposition rates are affected by: 1) climate factors (temperature and soil moisture); 2) litter quality and 3) decomposers including soil fauna. Climate (especially severe drought) seems to be not only the primordial factor that influences the activity of decomposers, but also the chemical composition of the leaves (primary vs secondary metabolites). Here, we assess the HFA hypothesis applied to the new climate projections for the Mediterranean basin: reduction of rainfall events around 30%. We resorted to 3 forested experimental sites with the 3 main Mediterranean tree species in South of France: downy oak (*Quercus pubescens*), holm oak (*Quercus ilex*) and aleppo pine (*Pinus halepensis*). Senescent leaves were collected and placed into litter bags and randomly redistributed in the three experimental forests under a control and rain exclusion plots. The litter mass loss rates were followed during one year of decomposition. The results could give us an insight about the decomposition rates and the hypothetic HFA of these three main Mediterranean tree species on control plots, ii) the persistence of the HFA under intensive drought, and finally iii) the effect of future shift of the plant communities on the nutrients cycle and the overall ecosystem functioning.

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