**Linking plant functional diversity to the provision of ecosystem services in Mediterranean drylands**

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Mediterranean landscapes are the result of a long history of anthropogenic and natural disturbances. A remarkable example is the agro-silvo-pastoral system of holm-oak (*Quercus ilex* L.) woodlands (*montado*) which occupy large areas in southern Iberian Peninsula. However, these areas are increasingly being affected by desertification and land degradation processes, which cause biodiversity loss, affecting the provision of critical ecosystem services. The human-pressure in these areas together with the expected climatic change scenarios (e.g. changed precipitation patterns) can further enhance these processes, requiring urgent monitoring actions to timely prevent and/or reverse their effects.

The impact of global change factors on ecosystems has been frequently evaluated through plant species richness. However, the monitoring of such impacts requires an understanding not only of the dynamics of vegetation change but also of the underlying ecological processes. Therefore, ecosystem monitoring should consider the diversity of species traits in addition to species diversity, since they are the key drivers of ecosystem processes and resilience. Functional traits of organisms have large impacts on the magnitude of ecosystem functions (e.g. productivity, water and nutrient cycling, decomposition), and thus quantifying functional trait diversity and linking it to ecosystem processes is a rapidly expanding area of research.

Our research has been focused on the study of plant functional diversity along a desertification gradient in Mediterranean Holm-oak woodlands, aimed at modeling its relation with ecosystem functionality and provision of services. We further use this functional approach (i) to early-detect the effects of climate change and desertification; (ii) to better predict ecosystem future trajectories; (iii) as a tool to plan management strategies and ecosystem restoration actions (and improve its cost-effectiveness). We believe it can greatly contribute to mitigate global change impacts, increase biodiversity and improve the provision of ecosystem services in Mediterranean areas.

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