

Microclimatic specificity of a Mediterranean oak woodland (montado) in context of global change.

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Abstract: The effects of oak trees on microclimatic parameters in *Quercus rotundifolia* Lam. Woodland in Alentejo, Southern Portugal, are reported. The results show that oak trees create a marked differentiation in the grass matrix between open and tree-canopied habitats. Compared to open areas, oak canopy cover is associated with lower soil moisture content, lower soil temperature and lower photosynthetically active radiation (PAR). Soil temperature values outside the canopy shelter are generally higher than under the canopy, even two-fold during the winter. The decrease in soil water content is more rapid in areas not affected by tree canopy, but the recharge is earlier faster. PAR intercepted by tree canopy exceeds 60%, affecting dramatically production in herbs. Different climatic conditions at presence of trees, associated with higher variability in chemistry environment under the canopy, if combined with the IPCC forecasts for the Mediterranean region, pose new challenges in management of the montado areas.