

Monitoring of *Quercus ilex* L. (holm oak) dieback and mortality in central and southern Italy

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Although considered drought-resistant, Mediterranean evergreen sclerophylls can suffer from low atmospheric humidity associated with high temperature (high VPD). Whereas deciduous trees prevent damage by shedding leaves, evergreen species, which work at the limits of hydraulic safety, are prone to cavitation damage.

Quercus ilex dieback and mortality has been occurring in coastal areas of Tuscany (Central Italy) since the extreme drought and heatwave of 2017. In August 2024 the mean temperature for European land was 1.57°C above the 1991-2020 average for August, with a marked increase in southern Europe. In Italy the highest anomalies for 2024 were observed in central and southern regions, where extensive dieback and mortality of holm oak trees and sclerophyllous shrubs occurred. Sardinia, Sicily and Apulia were especially affected. In Sardinia, the extent of this phenomenon was estimated to be over 100,000 hectares through remote sensing (Sentinel-2) imagery. A monitoring plan is currently ongoing to evaluate their evolution with possible recovery or mortality of the trees as well as assessing the role of root pathogens *Phytophthora* spp.

In Italy Mediterranean forest and scrubs are approximately 10% of the forest area but are poorly represented in the ICP Forests Level I network. Due to the severity and increase frequency of these decay events, the authors support the need to improve the monitoring network with regional initiatives aimed at assessing the environmental and management drivers and the dynamics of the impacts with a multidisciplinary approach that includes ecophysiology and phytopathology. This presentation includes the role of *citizen science* with the participation of associations and volunteers through the "Silva Cuore", the first App designed in Italy aiming at surveying dieback forest stands within the Italian territory and contributing to the development of a valuable scientific database to improve the monitoring system.