

Effects of drought season length on live moisture content dynamic in Mediterranean shrubs: 8 years of data

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Mediterranean shrubs are an important component of Mediterranean vegetation communities. In this kind of vegetation, live fuel is a relevant component of the available fuel which catches fire and, consequently, its water content plays an important role in determining fire occurrence and spread. In live plant, water content patterns are related to both environmental conditions (e.g. meteorological variables, soil water availability) and ecophysiological characteristics of the plant species.

According to projections on future climate, an increase in risk of summer droughts is likely to take place in Southern Europe. More prolonged drought seasons induced by climatic changes are likely to influence general flammability characteristics of fuel. In addition, variations in precipitation and mean temperature could directly affect fuel water status and length of critical periods of high ignition danger for Mediterranean ecosystems.

The aims of this work were to analyse the influence of both weather seasonality and inter-annual weather variability on live fuel moisture content within and among some common Mediterranean species, and to investigate the effects of prolonged drought season on live moisture content dynamic.

The study was carried out in North Sardinia (Italy). Measurements of LFMC seasonal pattern of two really common and flammable Mediterranean shrub species (*Cistus monspeliensis* and *Rosmarinus officinalis*) were performed periodically for 8 years. Meteorological variables were also recorded. Relationships between live fuel moisture content and environmental conditions (i.e. rainfall, air temperature and soil moisture) were investigated and effects of different lengths of drought season on LFMC pattern were analysed.

Results showed that distribution and amount of rainfall affected seasonal variation of live fuel moisture content. In particular more prolonged drought seasons caused a longer period in which LFMC was below 95 -100% that is commonly considered as critical threshold for fire ignition and spread. This impact was particular evident at the begin of the autumn whereas a limited water availability in spring seemed to have less strongly influenced moisture content in the Mediterranean shrubs that we studied.