

*Abstract*

# Soil Quality Characterization of Mediterranean Areas under Desertification Risk for the Implementation of Management Schemes Aimed at Land Degradation Neutrality <sup>†</sup>

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**Abstract:** Soil is a key component of ecosystems as it provides fundamental ecosystem functions and services, first of all supporting primary productivity, by physical, chemical and biological interaction with plants. However, soil loss and degradation are at present two of the most critical environmental issues. This phenomenon is particularly critical in Mediterranean areas, where inappropriate land management, in combination with the increasingly harshening of climatic conditions due to Climate Change, is leading to significant land degradation and desertification and is expected to worsen in the future, leading to economic and social crisis. In such areas, it is of fundamental importance to apply sustainable management practices, as conservation/restoration measures, to achieve Land Degradation Neutrality. This approach is at the core of the LIFE project Desert-Adapt “Preparing desertification areas for increased climate change” which is testing a new framework of sustainable land management strategies based on the key concept that the maintenance of ecosystems quality is necessarily connected to economic and social security in these fragile areas. The project will test adaptation strategies and measures in 10 sites of three Mediterranean areas under strong desertification risk, Alentejo in Portugal, Extremadura in Spain and Sicily in Italy. We present the baseline data of soil quality analysis from 32 sites in the 10 study areas of the project. Key drivers of soil quality and quantity were identified and used as basis to select sustainable management strategies focused on the maintenance, improvement and/or recovery of soil-based ecosystem services, with particular attention to climate change adaptation and land productivity. The final objective of the project is to demonstrate, according to the LDN approach, the best adaptation strategies to recover degraded areas from low-productive systems into resource-efficient and low-carbon economies to preserve ecosystem quality and booster economy and social security

**Keywords:** soil quality; combat desertification; sustainable land management; land degradation neutrality; ecosystem services

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