

22. Use of mycorrhizae to increase survival and resilience of transplanted plants in habitat restoration practices.

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The UN's 2030 Agenda for Sustainable Development calls for the preservation of biodiversity, which is threatened due to habitat degradation and climate change. Actions to enhance restoration and resilience of habitats to reduce biodiversity loss are needed. Though *in situ* conservation is considered the best way to preserve biodiversity where species can persist with all their natural ecological interactions, the latter element is often ignored. Criticalities can arise when *ex situ* grown indigenous plants are translocated *in situ*, without their natural soil microbial associations, especially in a Mediterranean climate where abiotic stresses are severe. Mycorrhizal Fungi (MF) are fundamental for terrestrial ecosystems, enhancing plant productivity, alleviating abiotic and oxidative stress, and regulating macronutrients recycling. The aim of the project was to investigate the use of indigenous MF to enhance acclimatization and survival of *ex-situ* grown plants translocated for habitat restoration. The seeds of *Pinus halepensis* and *Quercus ilex* as well as sporocarps of naturally associated indigenous MF *Suillus collinitus* and *Pisolithus arhizus* were collected in Natura2000 sites in the Maltese Islands. Seeds were germinated under greenhouse conditions and MF were inoculated on the above-mentioned plant species at seedling stage. For *Pisolithus arhizus* was possible to inoculate *Quercus ilex* also at seed sowing stage. For *Suillus collinitus*, fragments of the ripe sporocarps were placed in *Pinus halepensis* seedling trays. At evidence of mycorrhization, the *Suillus collinitus* was inoculated on more *Pinus halepensis* seedlings through Mother Donor Plant technique. The growth performance of mycorrhized plants in the nursery, followed for a period of at least one year, showed better growth performance and survived periods of summer heat waves better than non-mycorrhized plants. All the mycorrhized plantlets produced will be reintroduced next fall into selected area of Natura2000 in the Maltese Islands as part of SiMaSeed restoration project.