

The LIFE program

LIFE is the EU's financial instrument for supporting environmental projects, for nature protection and climate actions. The general objective of the LIFE program is to contribute to the implementation, updating and development of the EU's environmental policy. Further information on: <https://ec.europa.eu/easme/en/life/>

BENEFICIARIES OF LIFE4FIR



COORDINATOR



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Decisive in situ and ex situ conservation strategies to protect the critically endangered Madonie Fir (*Abies nebrodensis*) in Sicily



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Introduction

Abies nebrodensis (Lojac.) Mattei is a critically endangered endemic species of Sicily (Fig. 1).

The relic population consists of only 30 adult trees and is highly vulnerable due to:

1. dramatic genetic erosion and fragmented range;
2. poor natural regeneration (Fig. 2);
3. superficial and rocky soil;
4. localized soil erosion;
5. grazing of wild herbivores and uncontrolled cattle.

The habitat of *A. nebrodensis* is part of the Natura 2000 network (habitat 9220*, SAC Ita 020004, SPA 020050). Natura 2000 is a network of sites and areas of ecological and naturalistic interest created by the EU for the protection and conservation of threatened species of flora and fauna and some rare habitats, identified as priorities by the Member States basing on Habitat 92/43/EEC Directive.

LIFE4FIR objectives and strategy

The main objective of the project is to improve the conservation status of *A. nebrodensis* by:

1. protecting the residual population;
 2. increasing the genetic diversity of the offspring and implementing of a reforestation plan to restore the dynamic structure of the population;
 3. implementing innovative strategies for the *ex situ* conservation of the species.
- LIFE4FIR aims at developing a reference model of best practices to transfer actions and results for the protection of other threatened Mediterranean conifers.

The implementation of the project will promote and encourage environmental education and policy, training, work, tourism and social inclusion.

Actions

1. Support to and protection of the relic population through the control of biotic, abiotic and anthropic disturbances (Fig. 3);
2. increase of the genetic diversity of the progenies by promoting cross-pollination between trees of the natural population and through the selection of outbred seedlings, verified by genetic analysis (Fig. 4). A clonal orchard will also be established to foster crosses among genotypes and to obtain improved seed in the future;



3. breeding in the nursery of selected, healthy and vigorous seedlings through mycorrhization and control of biotic and abiotic disorders (Fig. 5);
4. reforestation in 10 suitable areas of the Madonie Park by planting 4000 selected plants, to create re-diffusion cores;
5. implementation of a seed bank and a cryobank for the long-term *ex situ* conservation of pollen, seeds, embryos and embryogenic callus lines of *Abies nebrodensis* (Fig. 6).

