

ACTIVITIES & OBJECTIVES

- ✓ Map the needs of producers with respect to frost protection
- ✓ Design and develop an intelligent Internet of Things (IoT) system for monitoring selected atmospheric and agro-economic parameters, forecasting frost events, and provide early warnings of upcoming adverse conditions.
- ✓ Develop and implement timely responses prior to frost events to reduce the epiphytic populations of ice-nucleating bacteria under a critical level.
- ✓ Provide guidance on best agricultural practices, technologies, and support services aimed at reducing vulnerability and improving the resilience of crops to frost.
- ✓ Increase awareness among target groups and encourage a responsible attitude toward climate and the environment



THE CONSORTIUM

The LIFE-FROSTDEFEND project is implemented by the following institutions:

- National Centre for Scientific Research "Demokritos" (NCSR), Greece, Project coordinator
- Agricultural University of Athens (AUA), Greece
- Agricultural Cooperatives Union Aeghion SA (ACUA), Greece
- Institut national de recherche pour l'agriculture, l'alimentation et l'environnement (INRAE), France
- mSensis SA, Greece



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Forecasting and protecting fruit crops from frost damage



LIFE FROSTDEFEND

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THE CLIMATE IS CHANGING

Climate change (CC) has made the climate more unstable, resulting to frequent and intense extreme weather events. It is one of the most serious challenges for modern society, making the need for immediate adaptation imperative. The impacts of CC are already visible, affecting communities and sectors of the economy that depend on natural resources.

Agriculture is one of the sectors most exposed to weather risks. Crops are especially vulnerable to frost during key reproductive growth stages. As global warming speeds up crop development, these sensitive stages can occur earlier in the season—when frost is still likely—potentially increasing frost damage and yield losses.



LIFE FROSTDEFEND



THE PROJECT

The LIFE FROSTDEFEND project aims to develop and demonstrate the benefits of an innovative tool that monitors conditions in orchards and predicts the risk of frost. In this way, it seeks to reduce the damage caused by frost.

The project started in September 2021 and has a duration of four years. Its total budget amounts to €1.94 million, with funding as follows:

- €1.03 million from the European Union.
- €0.91 million from the project partners.



FROSTDEFEND INNOVATION

We are developing an intelligent Internet of Things (IoT)-based tool to monitor critical meteorological and atmospheric parameters in orchards in real time.

- The tool makes use of real-time monitored parameters to estimate the population of ice-nucleation-active bacteria on plant leaves, which can increase the risk of frost damage.
- The tool provides reliable warnings and practical guidelines to farmers for simple, low cost and sustainable actions to mitigate potential frost damage to tree crops, by reducing these populations ahead of an anticipated frost event.

