**Ecotoxicology of Air Pollution Research Group- CIEMAT**

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The Ecotoxicology of Air Pollution research group of CIEMAT has more than 20 years of experience studying the effects of air pollution on ecosystems and agrosystems. The main research interests are the effects induced by tropospheric ozone (O3) and atmospheric nitrogen deposition, two of the main drivers of the global change in Mediterranean areas. Effects are characterized from cell to ecosystem level on crops, trees and pastures, highlighting the effects on plant physiology, growth development and ecosystem services and the interactions with other stresses such as drought, nutrition and pathogens. The group was pioneer studying O3 induced effects in Spanish horticultural crops in the early 90s. The group set up the first Open Top Chamber (OTCs) experimental field in Spain in the late 80s, specifically designed for studying air pollutant effects on vegetation. Recently, this facility has been relocated and improved.

In the last years, the group has established a new experimental area to analyse atmospheric N deposition on a Holm oak forest located close to Madrid City (Tres Cantos). This facility is part of a small network of 3 Holm oak forests in Spain analysing N deposition and effects under different soil and climatic conditions as part of a national funded project. Gases and particle concentration, meteorology and soil water availability are continuously monitored inside and outside the forest to estimate atmospheric-plant-soil fluxes and effects. Also air pollutants are being monitored in the mountain area of Sierra de Guadarrama, recently incorporated in the National Park network.

One of the key aims of the Group is linking science with policy. In this sense, the experimental results are combined with models to perform pollution risk assessment for the Mediterranean area, under the framework of the United Nations Convention on Long-Range Transboundary Air Pollution (UNECE/CLRTAP). The CIEMAT team has contributed to the definition of critical levels and loads of ozone and nitrogen for the protection of Mediterranean vegetation and ecosystems and to assessing the effects of air pollution on ecosystems services such as biodiversity or food security. These activities are supported by the Spanish Ministry of Agriculture, Food and Environment. Currently the Group participates in several national and European research projects aiming to understand the impacts of air pollution on vegetation and to identify the co-benefits in combating air pollution and climate change. Also the role of peri-urban forests for improving the environmental quality in cities is being assessed.