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LIBERA UNIVERSITÀ DI BOLZANO
FREE UNIVERSITY OF BOZEN - BOLZANO

Fakultät für Naturwissenschaften
und Technik

Facoltà di Scienze
e Tecnologie

Faculty of Science
and Technology



IX Congresso Nazionale SISEF

Multifunzionalità degli Ecosistemi Forestali Montani: Sfide e Opportunità per la Ricerca e lo Sviluppo

16-19 Settembre 2013 | Libera Università di Bolzano

Posters - Riassunti



Elena Gottardini^{*(1)}, Fabiana Cristofolini⁽¹⁾, Antonella Cristofori⁽¹⁾, Marco Ferretti⁽²⁾

MONITORING THE EFFECTS OF OZONE ON NATIVE VEGETATION IN MOUNTAIN FORESTS - THE *VIBURNUM LANTANA* NETWORK IN TRENTINO

Tropospheric ozone is one of the most important phytotoxic air pollutant. The exceedance of critical levels set to protect vegetation are quite common in Trentino so that large parts of forests result exposed to potentially harmful levels of ozone. While the potential impact of this pollutant on vegetation is high, its real impact can be assessed in terms of foliar symptoms at the meso- and large-scale and in remote areas by means of ozone-sensitive species. In a previous study, we demonstrated the potential of *Viburnum lantana* L. (wayfaring tree) for field studies (Gottardini et al. 2010, J. Env. Monit. 12: 2237-2243): it is well known as ozone sensitive, it develops specific, unambiguous foliar symptoms (consisting of interveinal red-purple stippling on upper leaf surface) consistently with the trend of ozone exposure; it is widely distributed across the Alps. On this basis, a new, meso-scale study was launched to investigate whether - under field conditions - consistency exists between ozone exposure levels and response intensity of *V. lantana* in Trentino, northern Italy. To this purpose, a stratified random sampling design (elevation x ozone) was adopted to select 30 1x1 km² on the entire surface of the Trento province (6200 km²). The assessment of symptomatic plants was carried out in 2010 within each quadrat and repeated in 2012 on a subset of 10 quadrates. The frequency of symptomatic plants was higher where ozone levels were also higher. When comparing similar ranges of ozone exposures, symptomatic plants were always more frequent at higher altitude. However, the frequency of symptoms was not always proportionate to the level of ozone exposure. The lack of a statistically significant dose-effect relationship may reflect the complexity of ozone-plant interaction and the inherent large variability of biological response in field conditions. This is, however, the potential of the native bioindicator plants: the ability to identify potentially impacted (or protected) areas beyond the mere values of ozone exposure. In these terms, foliar symptoms on *V. lantana* are valid response indicators of ozone, suitable for large-scale surveys and on native vegetation in mountain forests.

Parole Chiave: Ozone, Forests, Vegetation, Monitoring, Foliar Injury, Stratified Random Sampling Design

Indirizzo Autori: (1) Research and Innovation Centre, Fondazione Edmund Mach, v. E. Mach 1, San Michele all'Adige (TN), Italy; (2) TerraData Environmetrics, v. Bardelloni 19, Monterotondo M.mo (GR), Italy

Corresponding Author: Elena Gottardini (elena.gottardini@iasma.it)