



## STUDY OF THE BIOLOGICAL CONTRIBUTION TO URBAN, SUBURBAN AND RURAL AIR QUALITY IN THE LAZIO REGION

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XXXVIIIth Cycle - A.Y. 2022/2023

The synergy between man and the environment and the effects of the latter on human beings has always been discussed, due to the increase in pollinosis, air pollution and the repercussions these have on human health. In this context, aerobiological pollen monitoring is a valuable tool for understanding the characterisation of the flora present in a territory, which is influenced by various meteorological factors, as well as by anthropic activities, including atmospheric pollution, which together determine the variations in the characteristics of the Annual Pollen Integral (pollen season) and hourly concentrations in the atmosphere (Brighetti *et al.*, 2022). Furthermore, several studies have demonstrated, albeit with still little evidence on the subject, the existence of a relationship between airborne pollen and environmental pollution (Di Menno di Bucchianico *et al.*, 2018), highlighting the role of pollution as an aggravating factor in allergic and asthmatic manifestations in sensitive patients, with exacerbation of symptoms, leading to respiratory, cardiac and vascular pathologies.

The aim of this study, starting from this premise, is therefore to assess the relationship between the spread of pollutants and the increase in the concentration of pollen in the air in urban areas, and possible consequences on public health, through the implementation in the city of Rome of an aerobiological monitoring of pollen grains and airborne pollutants in the atmosphere, focusing on the most relevant anemophilous species from the allergenic point of view and on the pollutants considered most dangerous for human health. To study the relationship between airborne pollen and pollutants, it is necessary to monitor the air quality index (AQI) of the metropolitan city of Rome. Therefore, the importance of investing in the study of the synergy between monitoring pollen grains and pollutants clearly emerges, in order to provide prognostic and immunotherapeutic indications as specific as possible to allergic users that take into account the interdependence between allergens and pollution.

Another objective of the project is to attempt to move from point measurements to a spatialised one, at least for the metropolitan city area, by integrating point measurements with those provided by the Copernicus Atmosphere Monitoring Service (CAMS), made available through the Atmosphere Data Store (ADS) for a number of pollen *taxa*.

Brighetti, M.A., **De Franco, D.**, Di Cosmo, C., Di Menno di Bucchianico, A., Froio, F., Miraglia, A., Moselli, D., and Travaglini, A. (2022). Aerobiological Biodiversity in the Metropolitan City of Rome. *Int J Environ Sci Nat Res.* 30, 556283. DOI: 10.19080/IJESNR.2022.30.556283.

Di Menno di Bucchianico, A., Brighetti, M.A., Cattani, G., De Gironimo, V., and Travaglini, A. (2018). Studio della presenza contemporanea di alti livelli di inquinanti atmosferici e di pollini nella città di Roma, In *PM2018 Convegno Nazionale sul Particolato Atmosferico – Atti IAS*, eds. (Bologna: ISBN 978-88-942135-1-5), pp. 56.