



PREVENTION OF POLLINOSIS IN GREEN AREAS IN ROME THROUGH A NEW POLLEN RISK INDEX

PhD Student: Annarosa Miraglia / *Supervisor:* Dr. Alessandro Travaglini

XXXVth Cycle - A.Y. 2019/2020

The proposed project is intended as a contribution to improve the quality of life of allergic people. Green areas in cities are a fundamental element to measure the quality of the urban environment. Today urban green areas represent more than ever the starting point for the redevelopment of big cities. Thanks to their ecological multi-functionality they are the solution for many urban criticalities, but often their presence is associated with a potentially dangerous impact on quality of life and health of the local population as a consequence of allergenic pollen emission. The aim of this project is the elaboration of a new quantitative index for estimating the allergic potential of tree species in urban green areas.

The index will be built on different factors: allergenic potential, pollination strategies, duration of the pollination period, tree size, number of individuals per species, surface area occupied by each tree, in order to calculate the overall percentage coverage of each allergenic species. These data are already considered in existing indexes. The originality of this index is in the fact that it will consider additional data: seasonal, environmental and meteo-climatic data, clinical data of allergic people and aerobiological data. The project requires the collaboration of: ARPA LAZIO for data of daily concentrations of atmospheric pollutants PM₁₀, PM_{2.5}, NO₂ and O₃ recorded by the stations of the air quality monitoring network present in Rome; Rete Meteo Regione Lazio for meteorological data and @llergymonitor™ for clinical data.

The index will be expressed as a ratio, thus enabling the comparison between urban green spaces. The index value of 0 indicates that the area is populated by arboreal specimens with low or absent allergenic potential, instead the index value of 1 indicates that the green area consists mainly of arboreal vegetation with high allergic potential.

This study is focused on at least three urban green areas in Rome for each of the three aerobiological samplers of Aerobiological Monitoring Center of the University of Rome Tor Vergata.

Moreover, to give to user easy and intuitive information, a digital map will be produced that could be consulted by the citizens in an additional section on the website of the Aerobiological Monitoring Center of the University of Rome Tor Vergata.

Cariñanos, P. et al. 2017. Assessing allergenicity in urban parks: A nature-based solution to reduce the impact on public health. *Environmental Research* 155, pp. 219-227.

Di Menno di Bucchianico A. et al. 2019. Combined effects of air pollution and allergens in the city of Rome. *Urban Forestry & Urban Greening* 37:13-23.

Von Döhren, P., Haase, D. 2015. Ecosystem disservices research: a review of the state of the art with a focus on cities in *Ecol. Indic.*, Vol. 52, pp. 490-497.