

Differential Ole e 1 Release From *Olea* Airborne Pollen In Southwest Iberian Peninsula. Results From The HIALINE Study

C. M. Antunes^{1,4*}, C Gálan^{2*}, R Ferro³, C Torres², E Caeiro^{1,3}, H Garcia-Mozo², R Brandão^{1,5}, JMT Buters⁶

& On behalf of the HIALINE working Group⁷

¹Mediterranean Institute for Agricultural & Environmental Sciences, University of Evora, Portugal, ²Department of Botany, Ecology and Plant Physiology, University of Cordoba, Cordoba, Spain; ³Portuguese Society for Allergology Clinical Immunology, Lisbon, Portugal; ⁴Center for Neurosciences and Cell Biology, University of Coimbra, Portugal; ⁵Department of Biology, University of Evora, Portugal; ⁶Center of Allergy and Environment (ZAUM), Technical University Munich, Germany; ⁷Hialine Working Group (Jeroen T.M. Buters, Germany (coordinator), Michel Thibaudon, France; Matt Smith, UK; Roy Kennedy, UK; Auli Rantio-Lehtimäki, Finland; Roberto Albertini, Italy; Gerald Reese, Germany; Bernhard Weber, Germany; Siegfried Jäger, Austria; Uwe Berger, Austria; Sevcen Celenk, Turkey; Lukasz Grewling, Poland; Bogdan Jackowiak, Poland; Ingrida Sauliene, Lithuania; Ingrid Weichenmeier, Germany; Gudrun Pusch, Germany; Marje Prank, Finland; Mikhail Sofiev, Finland; Lorenzo Cecchi, Italy)

*The authors equally contributed to the work.

Background:

Ole e 1 is the major allergen of olive pollen (*Olea europaea* L.), the second largest cause of pollinosis in some areas from the Mediterranean Region. Although it has been assumed that airborne pollen is a representative parameter for allergen exposure, variability of allergen content and/or release from pollen has been demonstrated for other taxa. The aim of this study was to: i) estimate the correlation between daily airborne olive pollen and Ole e 1 in ambient air; ii) evaluate the annual and geographical variation of pollen and allergenic loads in southwest Iberian Peninsula; iii) evaluate the contribution of meteorological parameters to ambient Ole e 1 loads variations.

Methods:

Airborne Ole e 1 and olive pollen were assessed simultaneously in Cordoba, Spain and Evora, Portugal. Aeroallergens were collected in 2009-2011 using prewashed polyurethane foam as impacting substrate (Rupprecht & Patashnick ChemVol®2400 high-volume cascade impactor, Albany, NY, USA). Flow was adjusted to 800 L/min with a rotameter controlled high-volume pump (Digital DHM-60, Ludesch, Austria). After extraction, Ole e 1 was quantified by ELISA. Airborne Olea pollen was monitored with a Burkard Hirst type Seven-Day Recording Volumetric SporeTrap®. Both samplers were placed side-by-side with the air input at the same level.

Results:

Figure 1: Pollen and allergen profiles olive.

In all the cases allergen followed the pollen profile but pollen counts were not representative for allergen loads; the same pollen counts yielded different amounts of allergen.

Figure 2: Allergen and Pollen loads.

The allergen and pollen loads presented geographical and annual variation, with considerably higher levels in Spain.

Figure 3: Pollen potency (allergen/pollen).

The mean allergen release per pollen grain presented geographical and annual variation; The latter was particularly important in Portugal.

Figure 4: Rain and annual pollen potency.

Cummulative precipitation (mm) previously to the pollen season are correlated with higher pollen potency, particularly in March or April.

Conclusions:

These results have shown that Ole e 1 is mostly associated with olive pollen grains but aeroallergen load was not always directly proportional to airborne pollen counts.

This suggests that Ole e 1 quantification is a better marker for olive allergen exposure. In conclusion, aeroallergen monitoring may contribute to a better understanding of the Ole e 1 exposure from airborne pollen.

Acknowledgments

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In relation to this presentation, I declare that there are no conflicts of interest.

Fig.1: Allergen and pollen profiles

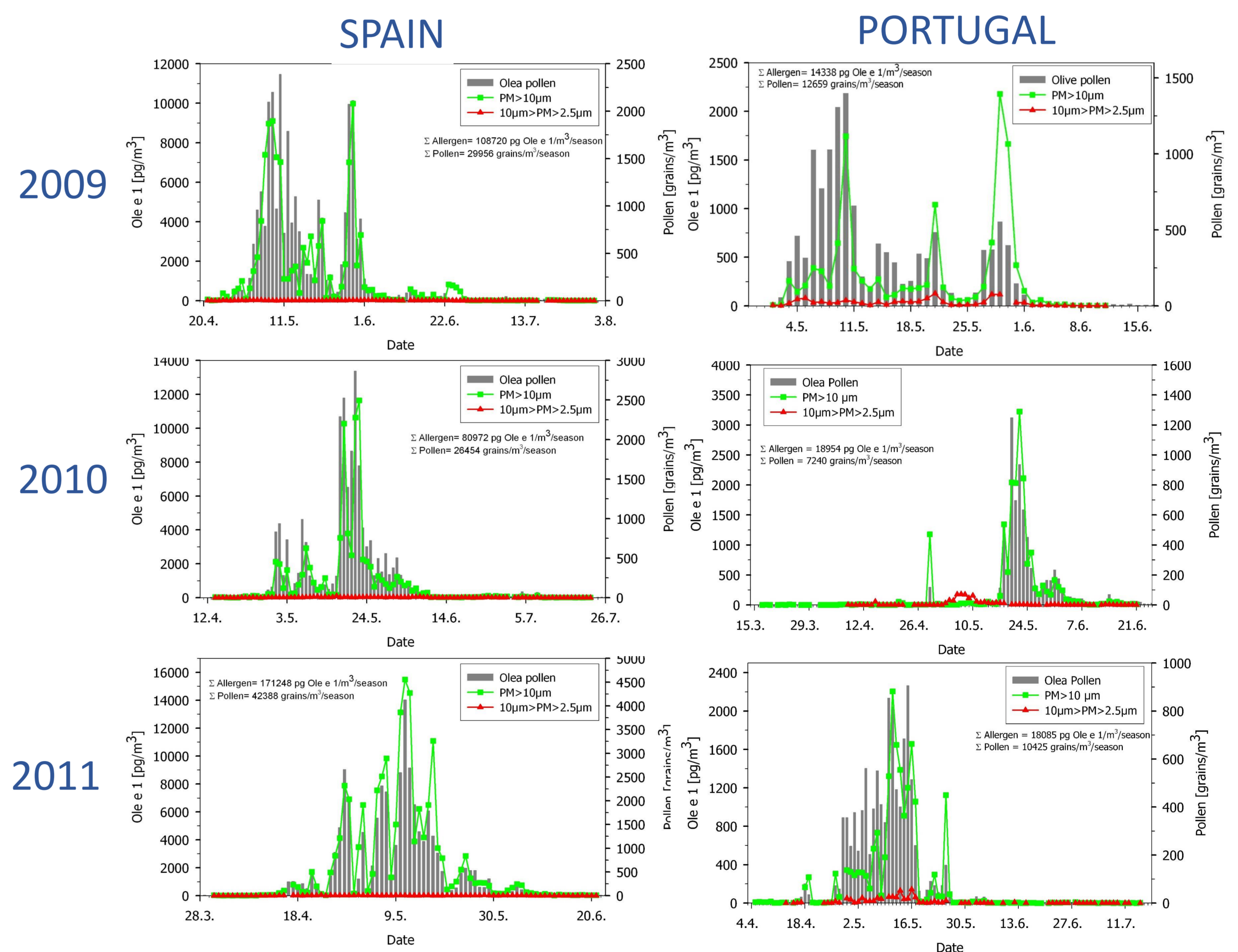


Fig.2: Allergen and pollen loads

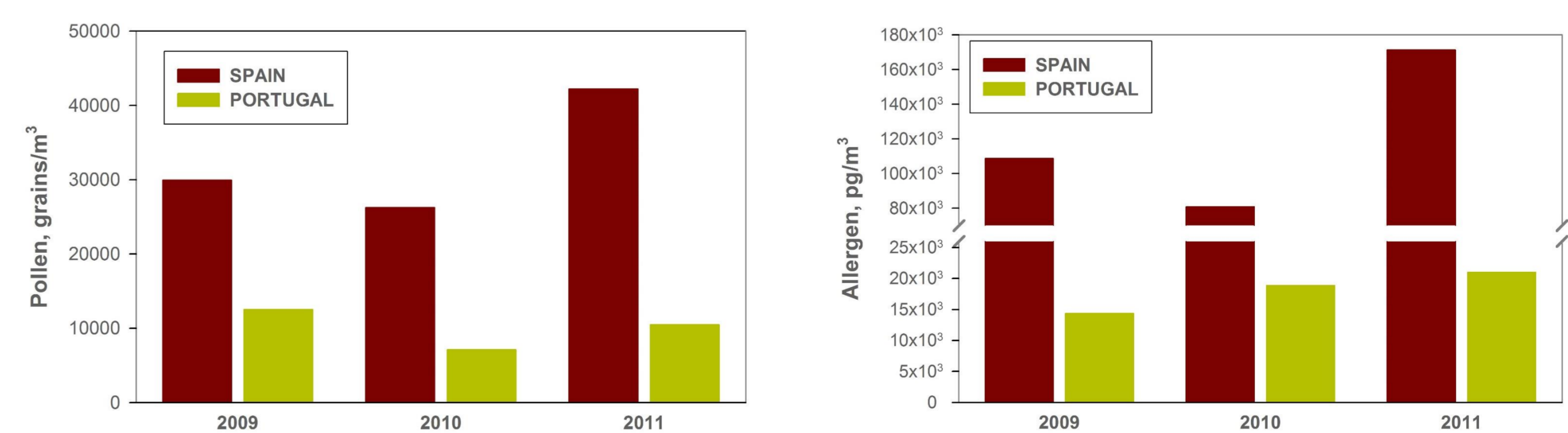


Fig. 3: Pollen potency

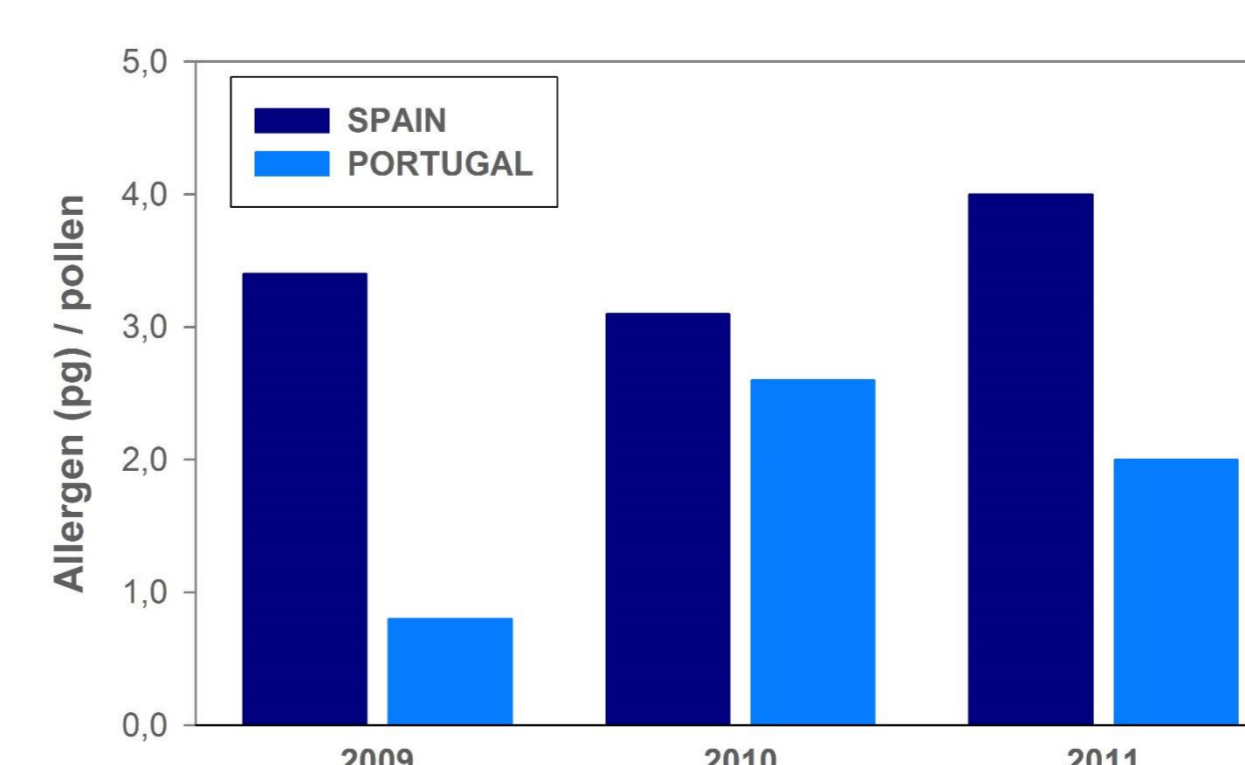


Fig. 4: Rain and annual pollen potency

