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AM.4

Ambient Ole e 1 aeroallergen and pollen counts of Olea europaea L. from 2009 until 2011 in Évora (South Portugal)

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Objectives: Airborne pollen of olive trees (Olea europaea L.) is a major source of aeroallergens in Portugal and a frequent ethiologic factor of pollinosis in mediterranean region. Ole e 1 is a major allergen widely distributed among the Oleaceae family that highly contributes for the olive pollen allergenic potency. It has been assumed that pollen is a representative parameter for allergen exposure, however, variability of allergen content of the pollen has been demonstrated for other taxa and the presence of allergen in submicronic particles remains controversial. The aim of this work was: i) to evaluate the bioaerossol fraction with higher concentration of Ole e 1; ii) to estimate the correlation between daily airborne olive pollen and the aeroallergen in ambient air; iii) to evaluate the annual variation of pollen potency in south Portugal with a meso-mediterranean climate.
Methods: Aeroallergens from ambient air were collected between 2009-2011 using a Rupprecht and Patashnick ChemVol®2400 high-volume cascade impactor (Albany, NY, USA). Flow was adjusted to 800 L/min and was kept constant with a rotameter controlled high-volume pump (Digitel DHM-60, Ludesch, Austria). Prewashed polyurethane foam served as impacting substrate. Particulate matter (PM) in ambient air was fractioned into PM>10 µm (XL) and 10 µm>PM>2.5 µm (M). Impacting substrates were extracted with 0.1 M NH4HCO3 pH 8.1 with 0.1% BSA. Ole e 1 was quantified by ELISA. Airborne Olea pollen was simultaneously monitored with a Burkard Seven-Day Recording Volumetric SporeTrap®. Both samplers were placed side-by-side with the air input at the same level.
Results: Annual pollen index of Olea in 2009, 2010 and 2011 was respectively, 12524, 7240 and 10499 grains/m^3. More than 90% of the airborne allergen was found in the PM>10 µm stage. The allergen and pollen profiles overlapped in every season but deviations between pollen counts and allergen load were found. Aeroallergen load varied between14591, 18818 and 13340 pg/m^3. Ole e 1 mean release per pollen grain was 0,80 pg, 2,64 pg and 1,13 pg in 2009, 2010 and 2011, respectively. Yearly Ole e 1/pollen was negatively correlated with the total amount pollen.
Conclusions: These results show that Ole e 1 is preferentially associated with pollen grains, although a small percentage may also be found in submicronic particles. It was recorded a yearly variation in airborne pollen and Ole e1. The highest potency pollen and the highest allergen index were recorded in 2010, a season with the lowest pollen index. In conclusion, aeroallergen quantification may contribute together with airborne pollen counts, to a better understanding of the exposure levels to airborne pollen allergens.
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RMP.1

Spatial and temporal changes of exposure to airborne ragweed pollen, characterized by pollen indicators in Hungary, 1999-2011

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Objectives: Ragweed pollen exposure is one of the major health-related problem in Hungary, about 1.5 million people have ragweed pollen allergy. We aimed to investigate the spatial and temporal changes of ragweed pollen exposure and assess the population impact for the period of 1999-2011.
Methods: Airborne pollen concentration has been measured by the Hungarian Allergy Network for 20 years. To characterise the ragweed pollen seasons, population exposure in space and time, special pollen indicators were elaborated within UNIPHE (Use of Sub-national Indicators to Improve Public Health in Europe) project and harmonised with the indicator methodologies developed for the WHO European Environment and Health Information System (ENHIS). The start/end date, length of ragweed pollen season, annual sum of daily pollen counts and value of maximum concentration (pollen/m^3/given year) were evaluated. Population exposure to ragweed pollen was characterized using the following sub-indicators: (i) Population-weighted proportion of days in a specific year with pollen concentrations ≥30 pollen grains/m^3 (ii) Population-weighted average concentration of ragweed pollen in a specific year, defined as the population-weighted sum of all daily concentrations during a specific year divided by the total number of days in the year (iii) Population-weighted duration of the ragweed pollen season in a specific year, estimated as the cumulative sum of daily concentration of pollen grains/m^3 within the entire time period of flowering at a specific station. These daily cumulative sum data were used to determine days corresponding to the 1st and 99th percentiles of the cumulative distribution. The length of the pollen season is the period between these days. The data were retrieved from the UNIPHE database (http://data.uniphe.eu). Meteorological data (temperature, precipitation) were used to characterise the seasons. Population data were collected from a circle area within 17.5 km radius from pollen monitoring stations.
Results: The annual pollen load showed a cyclic character depending on the meteorological variables, the national average was between 2800-8000 pollen/m^3 in wet years and between 100-9000 pollen/m^3 in dry years. The mean population weighted duration of the seasons varied between 14-20 days, it was shorter in the southern part of the country compared to north, and most of the "allergic" concentration days (≥30 pollen/m^3) were typical also in these regions. However in some central and northern areas the population weighted exposure was lower, in spite of the higher SUM (16000 pollen/m^3 in 1999, Kecskemét) or MAX values. In the region of Budapest, the patients have to tolerate long seasons with relatively moderate exposure. In the wetter regions the population weighted pollen concentration is relatively lower in the years with rainy summer, than in dry years. But in the typically drier regions, the relative difference is small.
Conclusions: The new indicators can be applied to characterize the pollen season in time and space, its intensity and the rate of population exposed to allergic daily pollen concentration. The analysis of longer time series allow to monitor the impact of climate change.
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RMP.2

20 year survey of Ambrosia allergy rates in Legnano (Italy) – wh for Ticino (Switzerland)?

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Objectives: Ambrosia is spreading invasively in many European coun showing the long-term consequences of the sensitization prevalenc needed. In this study we can show the development of Ambrosia s symptoms over a period of 20 years among the patients of the allerg Legnano together with the measured pollen concentrations. Legnan in a region in northern Italy, known for its high Ambrosia pollen loads neighbouring Ticino (southern part of Switzerland), where a considera Ambrosia pollen is transported with southwest winds from the Milan re
Methods: In Legnano, the sensitization of patients to Ambrosia and tested by a skin prick test. The patients were interviewed about their c time of incidence of the symptoms. On average, 1100 patients per y study in the years 1989-2008. The daily pollen concentration was measu type pollen traps in both countries. To evaluate the sensitization risk in data (from the measuring stations Lugano, Locarno, Cadenazzo, M with those of Legnano.
Results: In Legnano, the sensitization rate to Ambrosia increased from the patients whose skin prick tests were positive to pollen. In 1989, ab sensitized patients suffered from respiratory symptoms (rhinitis and/or After 5 years, this percentage increased to 70% and finally reached asthma was initially 30% among the Ambrosia sensitized patients and i The average seasonal pollen index (SPI) in Legnano was 4800, in Mez 400. The average number of days per year with a high Ambrosia p pollen/m^3) is for Legnano 47 days, for Mezzana 24 days and for Lugar
Conclusions: The extent of the consequences of high Ambrosia pol ascertainable over the short term. Sensitization rates have constantly of more than 15 years in Legnano, and moreover the incidence of alle first years. In Lugano the sensitization rate apparently experienced no is considerably lower than in Legnano. In Mezzana a higher allergy Lugano; but patients data are lacking until now. However, regardless of the measured Ambrosia pollen concentration, it is important to st measures, as soon as the first Ambrosia plants appear, as the invasiv makes a later containment very difficult.

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RMP.3

Assessment of common ragweed (Ambrosia artemisiifolia L.) bio

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Objectives: In Lithuania, ragweed is attributed to late-emerging wee of this species' representatives was identified during the 1985-200 only sporadic individuals are being found. The current study was aim characteristics of ragweed grown in a cultivated soil in Lithuania and to e between these attributes.
Methods: In April 2011, ragweed seeds were sown under laborato ensure earlier emergence of seedlings and to protect them from fr had produced true leaves, the plants were transferred to the greenh ragweed seedlings were transplanted in a cultivated soil in a perman environmental conditions were not controlled at any of the growth st three 10 m^2 experimental field with 10 common ragweed plants per pl field were taken for analysis by using random sampling method. Plant the beginning of September. The average number of pollen grains pe having assessed stamens collected at different plant heights. Ragwee calculated based on literature data on the number of male flowers biometrical data collected during the study. At the end of October, th to the laboratory for assessment. Two methods were used. The firs based on the rank of branches. The second assessment method is biometrical indicators according to plant part. The average number of was established having assessed stamens collected at different plant productivity was calculated based on literature data on the number o head and on biometrical data collected during the study. Statistical ana the results of biometrical data.
Results: Having estimated biometrical indicators of ragweed grown in was found that an average plant height is 134 cm (SD=15.41). A strong between ragweed inflorescence length and number of male flower he longest male inflorescences (14.46±8.28 cm) are formed on the tops o and the number of male flower heads is the highest (140±50) in them. a cultivated soil produces approximately 36000 flower heads. One anth 3408±2127 pollen grains. In the conditions favourable for ragwee produces about 7.4E+09 pollen grains. In the upper part of plant, there correlation (r>0.75, p<0.01) between the number of clusters of fema seeds. One ragweed branch has on average 5-6 clusters of female flo 1.6±0.3 to 2.3±0.7 seeds are formed depending on the position of bra
Conclusions: Common ragweed formed shrubby and high productiv cultural soil in Lithuania. One ragweed plant produces from 26298 to that release billions of pollen grains in the atmosphere. It was found th 6906±1692 seeds with an average weight per seed of approximate is vital to carry out monitoring in the sites where ragweed has beer ragweed overgrowths.