

Abstract details

Conference	The 5th European Symposium on Aerobiology
Abstract number	0035
Last modified	16 March 2012
Submission date	Unknown

TEMPORAL AND SPATIAL DISTRIBUTION OF POACEAE POLLEN IN AREAS OF SOUTHERN UNITED KINGDOM, SPAIN AND PORTUGAL

Fernández Rodríguez S.¹, Adams-Groom B.², Tormo Molina R.¹, Silva Palacios I.³, Brandao R.⁴, Caeiro E.⁴, Gonalo Garijo Á.⁵, Smith M.⁶

¹ Plant Biology, Ecology and Earth Sciences, University of Extremadura, Spain

² National Pollen and Aerobiology Research Unit, University of Worcester, United Kingdom

³ Agrarian Engineering School, University of Extremadura, Spain

⁴ Mediterranean Inst. Crop & Environmental Sciences, University of Evora, Portugal

⁵ Allergy, Hospital Infanta Cristina, Spain

⁶ Aerobiology and Pollen Information Research Unit, Department of Oto-Rhino-Laryngology, Medical University of Vienna, Austria

Keywords: POLLEN MONITORING

Objectives

The main aim of this study was to analyse the temporal and spatial variations of Poaceae pollen in different biogeographical areas.

Methods

Pollen data (2005-2011) recorded using Hirst type volumetric spore traps were obtained at Worcester (SW UK), Badajoz (SW Spain) and Évora (SE Portugal). The pollen season was delimited using the Threshold 30 method. Weekly average data were examined using Spearman correlations and ANOVA to compare differences between places. Total annual pollen was compared with monthly rain between January and May using Spearman correlations.

Results

On average, Poaceae pollen seasons lasted 59 days in Worcester, 78 days in Badajoz and 77 days in Évora. The average sums of daily pollen concentrations recorded in the pollen season were 6045 for Worcester, 6620 for Badajoz and 12722 for Évora. The number of days > 50 grains/m³ was on average 32 for Worcester, 35 for Badajoz and 48 for Évora. On average, Poaceae pollen seasons started on DOY 150 in Worcester, DOY 104 in Badajoz and DOY 110 in Évora. For data from all sites combined, there were statistically significant correlations ($p < 0.01$) between Poaceae pollen season intensity and duration ($r = 0.567$), the number of days > 50 grains/m³ and duration ($r = 0.553$), and start dates and duration ($r = -0.679$). Weekly pollen data recorded at Badajoz and Évora was highly correlated. Weekly pollen data from Worcester were compared with Évora and Badajoz by moving data backwards week by week. The best fit and most statistically significant correlations were obtained by moving Worcester data backward by five weeks (Badajoz, $r = 0.809$, $p < 0.001$) and four weeks (Évora, $r = 0.848$, $p < 0.001$). The strongest relationship between season intensity and rainfall was between the annual sum of Poaceae pollen recorded in Badajoz and Évora and total rain during January and February. There was a statistically significant ($p < 0.001$) correlation between weekly Poaceae pollen counts and weekly temperature and with rainfall at Worcester, but not in Badajoz or Évora. ANOVA showed that differences between places were lower than differences between years.

Conclusions

Overall, longer Poaceae pollen seasons coincided with earlier pollen season start dates. Winter rainfall noticeably affects the intensity of Poaceae pollen seasons in Mediterranean areas, but this was not as important in Worcester. Weekly data from Worcester followed a similar pattern to that of Badajoz and Évora but at a distance of more than 1500 km and 4-5 weeks later.