

Interdisciplinarity of bioaerosol research/Bioaerosolu pētījumu starpdisciplinārītāte



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Spore calendar for Vinnytsia, Ukraine

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Background: While pollen calendars are common, spore calendars are rare due to the limited number of aerobiological stations worldwide that monitor fungal spores. However, many fungi are known to cause allergic reactions and are important to consider when estimating seasonal allergy risk factors globally. The aim of our study was to identify the most numerous fungi and their sporulation patterns to create a spore calendar for Vinnytsia, Ukraine.

Method: Fungi were monitored using Hirst-type volumetric spore traps at the Laboratory of Environmental Factors Investigation of the National Pirogov Memorial Medical University, Vinnytsia, Ukraine during 2022-2023 years. Their number on the microscopic slides were calculated under X 400 magnification and then converted into the concentrations per cubic meter of air.

Results: Up to 30 fungal spore types were identified annually during each vegetation season from March to early November in 2022-2023. The most abundant types were consistently Cladosporium, Ascospores (with Leptosphaeria comprising a significant portion), Coprinus, and Alternaria. Ustilaginales and other unclassified Basidiospores were also numerous. Peak sporulation occurred from June to late August, with concentrations exceeding clinically significant thresholds for Cladosporium (2,500 spores/m³) and Alternaria (100 spores/m³) during this period and continuing until November. The annual Cladosporium peak in 2023 occurred more than one month earlier (July 5) compared to 2022 (August 8), while Alternaria peaked on August 18 in 2022 and August 5 in 2023. Basidiospores showed the latest peaks, varying among different members of this Order from July 25 (Ganoderma) to October 3 (Puccinia) in 2023 and from July 20 (Ganoderma) to November 8 (Epicoccum) in 2022.

Conclusions: A diverse range of airborne fungal spores maintains clinically significant concentrations throughout the vegetation season in Vinnytsia. Peak sporulation periods vary between fungal types and show year-to-year variations in timing. Cladosporium and Alternaria consistently exceed their clinical thresholds during summer months and in autumn. The extended period of high spore concentrations suggests a prolonged risk period for fungal allergy sufferers in the region.

Please, submit you abstract

spore calendar, fungal allergy, molecular sensitization

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