Oral 2358

Density, Diversity and population dynamics of Fungal Spore Population in the Atmosphere of Arid land Area, Jordan.

M. ABU-DIEYEH[1], R. BARHAM[2]

[1]*Biological and Environmental Sciences, Qatar University, Doha, Qatar*; [2]*Biology and Biotechnology, The Hashemite University, Zarqa, Jordan*

This study was initiated to investigate variations in the seasonal and intradiurnal distribution of airborne fungal spores of Zarqa area and to correlate these variations with metrological factors. The study was based on daily spore trapping using the Burkard seven day recording volumetric spore trap, hence another objective was to compare results with a previous study on Zarqa using settle plate exposures. Pearson correlation coefficient was used to correlate the mean daily fungal spore concentrations with daily data of the meteorological parameter.

A total of 76396 fungal spores belonging to 41 genera of fungi were identified. The maximum trapped fungus was *Cladosporium* (49.34%); the other common fungal spores are *Puccinia* uridospores *(*11.14%), *Alternaria (*7.70%), *Ustilago (*7.62%), and *Drechslera (*4.03%). However the rest (20.11%) was attributed to 36 genera of fungi.

April was the month of the highest mean daily density with (27.82 spore m^{-3}), while January was the least (= 6.87 spore m^{-3}). Two peaks were recorded one in April (The maximum daily density =139.58 spore m^{3}) and the other was in June (70.42 spore m^{-3}). March was the month of highest diversity. Total daily spore count showed a significant positive correlation (P = 0.05) with maximum temperature and a significant negative correlation (P = 0.05) with relative humidity. Significant correlations were also obtained between metrological parameters and daily counts of all common genera. Significant differences in intradiurnal fluctuations were observed from June to November 2009. The mean monthly and total annual counts of fungal spores were both significantly favoured the period 20:00-4:00 h. The most common genera *Alternaria, Cladosporium, Drechslera* and *Puccinia uridospores* showed significant differences between the three periods with 20:00-4:00 period had the greatest values of daily spore counts.

Differences in species composition, abundance, and temporal (seasonal and diurnal) distribution of Zarqa aerospora were observed between spore trapping (the present study) and settle plate exposures (a previous study) methods. It was suggested that the two methodologies can be complementary to each other and not sound to be comparable except in the fact that *Cladosporium* was the most common fungi in the atmosphere of Zarqa area.

Most of the prevailed airborne fungi in Zarqa area were reported in the literature as allergenic or sometime as pathogens for human, animal or plants. Therefore spore calendars based on daily spore densities were constructed for the first time.

Keywords: Airborne fungal spores, Arid land, Seasonal and intradiurnal variation.