



MEETING ABSTRACT

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A post-hoc qualitative analysis of real time heads-up pollen counting versus traditional microscopy counting in the environmental exposure unit (EEU)

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Background

A custom digital imagery method for real time identification and counting of pollen was qualitatively evaluated in the Environmental Exposure Unit (EEU).

Methods

Airborne grass pollen was collected in the EEU via a Rotorod[®] impact sampler. The pollen grains on each sampling rod were counted using both traditional and heads-up microscopy. The heads-up technique incorporated a microscope camera to create an on-screen image of the sampling rod. Firstly, unique images were created by manually advancing the stage, without duplicating previously captured pollen grains. Well-defined, sharp images were obtained by fine focus and zoom combinations to enhance certainty and recognition speed. Secondly, using a custom application, each pollen grain was identified and counted on-screen by “point and click” or “screen touch”, simultaneously counting and permanently anchoring opaque dots to the pollen grain locations. Counts were stored in real time on a central database.

Results

Increased clarity of the pollen grains resulted in higher counting accuracy. Duplicate counting of pollen grains was eliminated by digitally labelling counted grains. Additional need for manual counting devices, commonly associated with mechanical and human errors, was eliminated. Error free counts can be obtained with increased speed, therefore, improving the overall efficiency of the process and the EEU system as a whole.

Conclusions

This validated heads-up counting technique will allow for an increased response time to changes in the EEU pollen levels. This advancement could also enhance pollen counting processes followed by others using direct microscopy pollen counting techniques.

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