

A Note On The Pollen Content Of The Air Inside A Building

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In some countries the pollen content of the air is routinely monitored as a service to those who suffer from hay fever and other respiratory illnesses. Various sampling techniques, ranging from mounting coated glass slides on simple stands to the use of sophisticated mechanical devices, are used. Although most programmes involve sampling out-of-doors where pollen is most abundant, it is known that pollen is carried into buildings by air currents, on shoes, clothing and by household pets.

About 20 years ago when air conditioning was being considered for laboratories in the Botany Division building (now Landcare Research NZ Ltd.) a simple trapping programme was conducted for a year (1968-1969) in the pollen laboratory in order to assess the risk of sample contamination by exotic pollen. At first a slide coated with stained glycerine jelly was exposed every day, but because counts were so low this was soon extended to a week. After the first month petrie dishes containing just enough glycerine to cover the bottom were used instead and pollen concentrated from this was mounted on slides for examination.

During the spring and summer seasons counts of up to 130 grains were obtained from each slide by examining most of the slide area. For a month from about mid-March pollen counts were between 50 and 100, and from mid-April to mid-August the count for each slide was usually lower than 50.

Fifty pollen types were recorded. Twenty-six were anemophilous or amphiphilous and of these only six were consistently present during the spring or summer months (from September through to the end of February). Grass pollen occurred on every slide and macrocarpa type pollen was regularly recorded except for two weeks during late summer and autumn. Of the other five, only chenopods were well represented, especially during spring and summer. Birch pollen was recorded only during spring (September to the end of November), but pine pollen was present for most of the year. It was most abundant during late spring. Plantain pollen was regularly present, albeit in relatively low numbers during spring and summer, but in one week during November (13-20 November) very high counts were obtained.

Oak pollen was recorded in low numbers for a few weeks during early spring and willow, present during the same period, attained high values at the end of October 1968. Sorrel persisted from late spring into mid summer. Beech (*Nothofagus*) pollen, a dominant pollen type in many Quaternary pollen spectra, was always present during the summer and autumn months, but never in great numbers and often never more than one per slide; dandelion

type pollen followed a similar pattern. Fungal spores were present in low numbers during the spring and summer, but no attempt was made to identify them.

The pollen grains were derived from pastoral and agricultural farmland well planted with shelter belts of pine, macrocarpa, willow and gorse. Extensive plantations of pine, eucalypts and other exotic trees are scattered throughout the region, but none are close to the laboratory. The immediate environs of the laboratory include experimental gardens in which native plants, crop plants, including cereals, and various ornamentals are grown. It is against this background of potential pollen sources that the results outlined above need to be considered.

Five pollen types known to cause hay fever were recorded; these were birch, chenopods, grass, macrocarpa and plantain, which were present in very low numbers. Beech pollen is poorly represented despite the presence of several trees only a hundred metres from the laboratory windows. The presence of one or two pollen grains of raupo for a three week period in January 1967 coincided with the time when flowering stems of the plant were displayed in the main entrance vestibule at the opposite end of the building. Since none were brought anywhere near the laboratory they must have been carried on clothing or on faint air currents through the corridors.

The pollen counts were compared with those derived from dust scraped from venetian blinds in the laboratory and from a dwelling in Lincoln township. The results from both sets of blinds were the same and, except for the greater number of pollen types recorded, were similar to those obtained from the pollen traps in the laboratory. It was concluded that there was little risk to hay fever sufferers, or of sample contamination, but air conditioners, with filters, were installed so that there was no need to open windows in warm weather.