



Potential impacts of climate variables on the pollen season of birch (*Betula* spp.) in Ireland

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Birch (*Betula* spp.) grow extensively across Europe and are amongst the most allergenic tree species in the region causing rhinitis in 10-20% of the adult human population. *Betula* spp. are native to Ireland with broad distribution across the country. Current research throughout Europe on the *Betula* pollen season has shown strong evidence that increasing spring temperatures are linked to increased pollen levels in the atmosphere. In order to investigate any correlation between temperature, (and other climate variables) and pollen in Ireland, Hirst-type volumetric spore traps were deployed at 3 locations from February to June 2010. The counts were analysed to establish the beginning, peak and length of the pollen season at each site and averaged to determine the overall season. Studies have shown *Betula* pollen induces allergenic symptoms at 80 grains/m³ but were also found to cause reactions at concentrations as low as 30 grains/m³ during the peak season. Our results to date indicated that the season began at the most southerly site in Cork first, with a peak count on 25th April of 263 grains/m³ and total seasonal count of 674 grains/m³ for that site. This was in contrast to the most northerly site near Dublin where the count peaked on 30th April at 127 grains/m³ totalling 1034 grains/m³. At the second southerly site in Wexford, however, the lowest count was recorded, peaking at 64 grains/m³ on 8th May with a total of 320 grains/m³ for the season. Spring temperature at all sites revealed that Cork had the highest temperature. The earlier onset of the pollen season at Cork was as expected as the growing season is on average earlier in the south of the country due to warmer spring temperatures. The greater volume of birch pollen trapped at the most northerly site was more than likely a direct result of birch planting schemes near the trap. Indeed the lowest counts were recorded at the second most southerly site in Wexford an area dominated by agriculture with few birch trees in the landscape. Preliminary results for 2010 showed the *Betula* pollen season in general peaked on 1st of May with an average count of 151 grains/m³ and lasted 23 days. These data will be further analysed using additional climate variables such as wind and precipitation to determine if they have influenced the timing of the season. The trapping campaign will be repeated in 2011 and compared to the 2010 pollen season to establish if there is a significant relationship between the two years. In addition, the Irish data will also be placed in a European context by comparison to published results from a range of European countries.