Aetiology of 'Bleeding Canker' Disease of Horse Chestnut Trees

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‘Bleeding Canker’ is a disease of Horse Chestnut trees (Aesculus hippocastanum) identified throughout North-West Europe since 2002. The infection, first identified in Ireland in 2011, causes bark on horse chestnut trees to bleed a dark sticky fluid leading to possible tree death. The aims of this research were to: survey the extent of the disease in Ireland, isolate possible causal agent(s) of bleeding canker and compare findings with similar European research and finally develop a more precise PCR primer for the identification of the agents. In the absence of official data on the incidence of ‘Bleeding Canker’ in Ireland, this extensive survey of 1,587 trees showed 61% exhibited symptoms of the disease. Scientists, worldwide, differ on the causal factors of the disease. Early research indicated Phytophthora sp. but more recently the causal mechanism in UK populations (S.Green et al 2009) indicated involvement of the bacterium Pseudomonas syringae pv. aesculi (Pae). Samples from lesions found at the necrotic phloem of diseased horse chestnut trees were subjected to PCR and RealTime PCR tests using gyrB primers. The results were aligned with known strains (BLAST) and found to match the United Kingdom, German and Indian Pae strains. To date, this is the first sequencing identification of Pae in Ireland. A more specific PCR primer was designed to allow more accurate detection of Pae from infected samples. The development of the more specific PCR primer has assisted in the identification of Pae as the causal factor of ‘Bleeding Canker’ on Horse Chestnut.

Awards Won:

Second Award of $2,000