Characterisation of a Possible Causal Agent of Horse Chestnut Bleeding Canker in the UK

Stem bleeding on horse chestnut in the UK was first reported in the 1970s, when the cause was attributed to Phytophthora. Over the past four or five years, the number of reports of horse chestnut trees (Aesculus hippocastanum) with ‘bleeding cankers’ has increased markedly in the UK as well as in Belgium, France, Germany and the Netherlands. Closer investigation has revealed that the most frequently isolated agent appears to be a gram-negative fluorescent bacterium. Whole cell fatty acid analysis has identified a number of isolates as Pseudomonas syringae. Further investigation is underway to confirm whether this organism, either singly or in combination with other pathogens, could be the cause of the current epidemic.

Symptoms visible on affected trees include bleeding areas on their stems and sometimes on their scaffold branches. In the later stages, loss of foliage and crown die back develop.

Sequencing of the gyrase B gene (gyrB) has indicated the presence of a single strain of Pseudomonas syringae in infected trees in different areas of the UK. The gyrB sequence of the isolates from bleeding canker was found to be identical to that of Pseudomonas syringae pv aesculi (NCPPB 3681), originally isolated from Aesculus indica in India in the 1970’s (Durgapal and Singh, 1980), and also to a recently isolated P. syringae strain from A. indica in the UK.

Isolates of the P. syringae strain have induced leafspots on A. hippocastanum and A. indica but have not yet been proven to induce bleeding stem cankers.

For more information see: www.forestresearch.gov.uk/bleedingcanker

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Reference
Durgapal, J.C. and Singh, B. (1980). Taxonomy of pseudomonads pathogenic to horse-chestnut, wild fig and wild cherry in India. Indian Phytopathology 33, 533-535