

## Bacteria Bleeding Canker Identification, Biology & Management

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Bacterial bleeding canker caused by the bacterial pathogen *Pseudomonas syringae* pv *aesculi* has become a serious and widespread problem of horse chestnut trees (*Aesculus hippocastanum* L.) in the UK. Depending on tree health, cultural practices and weather conditions, damage can range from complete recovery to tree death. The disease is more severe on trees suffering from insect attack and/or environmental stress such as drought or waterlogging.

### Symptoms

Bacterial bleeding canker of horse chestnut trees infects the phloem and cambium of the tree on the trunk and branch junctions. The bacterium causes necrotic lesions (cankers' Figure 1) which leak tree exudates that are orange in colour when fresh and turn a dark black colour when dried. If these cankers encircle the trunk of the tree, then the water supply to the crown will be disrupted and crown death will ensue. At the moment it is not known how bacterial bleeding canker is spread, however there are thoughts that it could be linked to the water cycle being spread by rain or snow. The majority of bacterial bleeding canker infections are seen in spring and autumn.

### Causal Agent

Bacterial bleeding canker is caused by a gram negative bacterium known as *Pseudomonas syringae* pv. *aesculi*. Bacterial bleeding canker is generally found in the phloem, in main stems of trees, on branches and can also persist in and on the foliage. Through-out the UK thousands of trees now exhibit symptoms of this bacterial pathogen.

Figure 1: Bacterial bleeding canker symptoms



### Control

The key factor regarding bacterial bleeding canker management is understanding that on occasion infected trees can recover and

survive. Management strategies should therefore be aimed at promoting tree vitality i.e. treat the patient and not the disease. This should be achieved by:

1. Inspecting for any external symptoms that could induce stress in trees i.e. new building construction and remediate if necessary.
2. Ensuring optimal tree nutrition. Sample soils for nutrient and pH levels and based on the results of the soil nutrient analysis fertilise with the appropriate soil nutrients.
3. Apply a suitable insecticide to control insect pests such as horse chestnut leaf miner.
4. Apply organic matter such as an under composed wood mulch to a 5-10cm depth. Ideally mulches should be applied to 1m beyond the canopy drip line if possible.
5. Guard against over and under irrigation. Use soil moisture probes to ensure soil water status is optimal for tree growth.
6. Soil de-compact using an air-spade to stimulate root vigour (Figure 2)

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Figure 2: Air-spading to improve soil conditions



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