

## **What is Horse Chestnut Bleeding Canker?**

Bleeding Canker is a disease which affects all species of Horse Chestnut. It affects branches and trunks of the trees, which start oozing a red or black tarry substance from affected areas on the bark. This is caused by a fungal infection which kills the wood under the bark. When the infection spreads around the branch or trunk, it will kill that branch, or if it spreads around the trunk, it will kill the whole tree.

The disease affects all ages of Horse Chestnuts, from saplings to mature specimen trees. The Forestry Commission estimate that over 50,000 trees are affected so far in England, and many thousands of these have already been felled.

### **What are the Symptoms?**

The initial symptoms of the disease are bleeding lesions on the bark, scattered drops of rusty-red or yellow-brown or almost black gummy liquid ooze from small patches of dying bark on the branches or stems. The ooze will dry to a black, hard resin like substance.

Bleeding patches may also be found at the base of the tree at the soil surface.

After some months the bleeding bark patches may become cracked, allowing fungi to enter the wound. This secondary infection can cause more damage to the tree.

Over several years, and particularly if the tree has a number of bleeding cankers, the areas of dead wood will merge and eventually circle the whole branch or trunk. When this happens, symptoms spread into the crown of the tree. These include yellowing of the leaves, much smaller leaves, premature leaf drop and eventually, the death of the central crown of the tree.

Sometimes, part of the crown will fail to produce leaves, and later in the year the remaining foliage withers and dies.

Infected trees either produce fewer and much smaller conkers than usual, or fail to produce conkers at all.

As Horse Chestnut has brittle wood, infected branches may be susceptible to sudden fracture and dropping and the dead wood dries out. This is more common in hot, dry or windy weather.

### **What Causes Bleeding Canker?**

Bleeding Canker has been known of since the early 1970s. It was caused by a fungus called *Phytophthora*. It used to be an uncommon disease, and was slow spreading. Most trees infected would live for many years, and some would recover.

However, in the last 5 years, the disease has suddenly become more widespread and much faster acting. It now appears that a bacteria, *Pseudomonas syringae pathovar aesculi*, is the main causal agent, with the *Phytophthora* fungus following the initial bacterial infection.

This bacterium has been found in nearly all new cases of Horse Chestnut Bleeding Canker across Northern Europe.

Research has not yet discovered why the disease has suddenly become more virulent, or why the bacterial infections are now so fast spreading. However, it is thought that environmental stress, especially recent very dry summers and warmer, wetter winters, may play a part.

### **Is there a Cure?**

Despite much research across Europe, there is currently no chemical or biological treatment available to cure or slow the development of bleeding canker in Horse Chestnuts.

If the lesions and cankers become so extensive that the entire trunk is surrounded, the tree will inevitably die, and will have to be felled.

If major branches are infected and start to show dieback, they should be removed. Recently dead or dying branches are liable to fail and fall.

## **Management**

If the tree needs to be felled, or branches removed, care needs to be taken. The current Forestry Commission advice is that all wood that is felled or removed should be burned on site, or transported to a site to be burned as soon as possible.

It is not advised to store infected wood for use on wood burning fires or stoves. This is to try to prevent the spread of the disease.

If disposal cannot be carried out immediately, infected logs should be stored away from other trees.

The Dutch “Horse Chestnut Research Group” go further – their recommendations are that any felled wood should be taken by covered lorry to an incinerator or bio-furnace for burning. They state that open-air burning should only be used as a last resort to help prevent the spread of infection.

Chippings and leaves should not be composted unless the compost heaps reach a temperature of at least 60°C throughout the heap.

All tools used on infected trees should be disinfected, using methylated spirits or a commercially available disinfectant.

Where practicable, large machinery and vehicles that have used on infected sites should be hosed down to reduce the likelihood of transferring the infection.

## **Replanting**

It is not advised to replant an infected area with horse chestnut. In areas which have been replanted with various chestnut species, the young trees have shown signs of infection within a short time. Both white and red horse chestnuts appear equally affected by the disease.

Bleeding Cankers have also been found on *Acer* (maples), *Betula* (birch), *Quercus* (oak) and *Salix* (willow). So far, cankers infecting these species have been found to be caused by only the *Phytophthora* fungus, and do not appear to be as virulent and fast acting as those on Horse Chestnuts.