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46	Supersedes 83	PATH

Arboriculture Research Note 46

Issued by the Arboricultural Advisory & Information Service

ANTHRACNOSE OF LONDON PLANE (*Platanus x hispanica*)

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Summary

Anthracnose is the only common disease of London plane in Britain. Buds, leaves, shoots and twigs are killed but outbreaks are sporadic and recovery is usually rapid and complete. Control is unnecessary on large trees but effective fungicides are available for nursery use.

Introduction

1. In Great Britain, there are very few diseases of London plane and only one, anthracnose, caused by the fungus *Apiognomonium veneta* (= *Gnomonia platani*) is at all common. Even this, alarming though the symptoms sometimes appear, generally results in no more than a temporary shortage of foliage and the death of small twigs. The disease can cause enough dieback to render trees unsightly for several years, but seldom is a tree's ornamental value radically impaired. Even in nurseries, where trees can be rendered temporarily unsaleable, recovery is usually complete by the end of the growing season.
2. In some years, damage to London plane, which might be confused with anthracnose is caused by road de-icing salt. The differences are given in Arboriculture Research Note 47/83/PATH-Crown Damage to London Plane.

Symptoms and the spread of the fungus

3. The fungus causes four distinct types of damage:
 - i) **Leaf blight.** In the first few weeks after flushing, leaves are susceptible to infection from spores produced on bark of twigs killed earlier by the fungus and (less important) from those produced on leaves which have overwintered on the ground. Dark, spreading, necrotic patches develop along the main veins. These may merge to form irregular brown blotches but it is characteristic of this disease that they usually remain closely associated with the veins. Spores produced from these lesions can also infect the same or other leaves. If the fungus spreads into and kills the petiole the leaf falls, often when it is still substantially green. In some seasons, trees may lose almost all their leaves in this way by early summer but remain bare only for the few weeks it takes for a new crop of leaves to develop from dormant buds.
 - ii) **Bud blight.** From the petioles infected during the leaf blight stage, the fungus enters the twig. Here, during the tree's growing season, it remains dormant, but during the period of the tree's dormancy it may resume activity and kill patches of bark around the leaf scars and auxiliary buds, thus preventing the buds from flushing in the following spring. The orange-brown colour of the dead tissue contrasts with the olive-green of the healthy bark, and as the twig grows in thickness the patch of dead bark forms a sunken canker.

- iii) **Twig blight.** If, instead of causing a localised canker encircling and blighting the bud, the fungus spreads right round the twig, the distal portion of the twig dies. Cankered and dead twigs persist for some years as evidence of earlier attacks.
- iv) **Shoot blight.** In the spring, scattered new shoots, which may have reached a considerable length, suddenly wilt, brown and die, as if killed by frost. The partially expanded leaves tend to be retained. In severe cases the damage remains very conspicuous until the browned, withered leaves and shoots are concealed by a new flush of healthy foliage. Although any shoots which develop from twigs, which were girdled by the fungus during the winter will soon die, the most severe outbreaks of shoot blight appear to occur where the fungus has overwintered harmlessly in the bark at the base of buds only to grow into and kill the expanding shoots in spring.

The fungus

- 4. The disease is caused by a fungus belonging to the taxonomic group called ascomycetes. It produces spores both vegetatively (conidia) and as the result of sexual activity (ascospores). The names of both states have changed many times according to mycological and pathological understanding and to comply with the *International Rules of Botanical Nomenclature*. Similar anthracnose diseases to the one on plane are caused by similar fungi on various other broadleaved trees. Mycologists have tended to look on all these species as one and the same as they are difficult or impossible to separate on morphological grounds. In this view the name currently favoured is *Apiognomonium errabunda*. However, as some of these fungi are host specific (e.g. the plane fungus will not infect oak) pathologists tend to prefer to retain different names for the forms on different hosts, and according to this view the plane fungus is named *Apiognomonium veneta*. In either view the conidial state is agreed to by a *Discula* species but no valid specific epithet has been allotted to it. There are innumerable synonyms, among the commonest being *Gnomonia platani*, *G. veneta*, (perfect state), *Gloeosporium nervisequum* and *Discula platani* (imperfect state).

Conditions favouring the disease

- 5. The prerequisites for severe leaf *blight* outbreaks in London plane are not fully understood. Since late in the last century, researchers have attempted to infect leaves with spores but often with little success, even on the very susceptible *P. occidentalis*. Often wounds have appeared to be necessary to allow infection but in recent years *P. occidentalis* has been readily infected provided that leaves have been kept wet for up to 28 hours, temperatures maintained at least 15 °C and sufficiently high concentrations of spores used.
- 6. The extent to which the fungus can spread through the bark to cause *bud* and *twig blight* is determined by the occurrence of periods of weather warm enough to stimulate the fungus into growth while the tree is dormant.
- 7. *Shoot blight* develops when, during the two weeks following bud burst, cool weather prevails and temperatures are conducive to rapid growth of the fungus while allowing only slow growth of the shoots.

Host susceptibility

- 8. In its native North America, *Platanus occidentalis* is very susceptible to anthracnose and this perhaps accounts for the tree's rare occurrence in Britain today. Most accounts agree that *P. orientalis* is much less susceptible. London plane (*P. x hispanica*), being a hybrid between the two, has clones which vary widely in susceptibility but it is generally much less susceptible than *P. occidentalis*.

9. In the USA, clonal selections and new crosses have produced named London plane clones which are resistant to the disease. Among these are 'Bloodgood', 'Columbia' and 'Liberty', but none of these appeared to be available in Britain (Sinclair et al, 1987).

Control

10. Because of the sporadic nature of serious outbreaks, the rapid recovery which otherwise healthy trees make, and the negligible long term impact that the disease has on London plane, it is unnecessary to control the disease on existing specimen trees. Nevertheless, in order to avoid unsightly outbreaks, it would be worthwhile planting resistant clones if these become available, or to plant the Oriental plane (*P. orientalis*) where this is in other respects a suitable choice.
11. All the while susceptible clones continue to be propagated, it may be necessary to control the disease in the nursery. In experiments benomyl¹ has given good control of the leaf blight stage of this disease.

Mix 100 grams of product in 100 litres of water and apply to wet both leaf surfaces at high volume (over 700litres per hectare).

The first application should be made at bud burst. Continue at 2 week intervals until early June.

Control is likely to be enhanced if any infected tissue (cankers, dead buds, shoots and twigs) is pruned out and burnt prior to spraying.

When using a fungicide always read carefully the manufacturers instructions on the label (including any accompanying leaflet) and apply the chemical for the use, at the rate and by the method recommended, paying particular attention to aspects of safety.

Suggested further reading:

Sinclair, W.A., Lyon, H.H., and Johnson, W.T. (1987). Sycamore anthracnose. In, *Diseases of trees and shrubs*, Cornell University Press.

Published by:

June 1991

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Revised with minor alterations May 2010

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¹ The current status under the *Control of Pesticide Regulations 1986* of any fungicide must be checked before it is used.

architects, the construction industry and other professionals, also to private individuals. The Arboricultural Research Note series is supported by the Forestry Commission.