THE TREE ADVICE TRUST

Tree Damage Alert No 119

AAIS ● Alice Holt Lodge ● Wrecclesham ● Farnham ● Surrey ● GU10 4LH

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Call the Tree Helpline on: 09065 161147
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Too Many Showers!

'*Water, water, everywhere, Nor any drop to drink*' (S.T. Coleridge Ancient Mariner). This must be a recent sentiment of many residents and occupiers of commercial properties particularly in the midlands and north east of England. Water is bad enough, but when that water is contaminated with mud, sewage and other unmentionable material the outlook must be particularly grim!

What about the trees? How will they respond to the recent (June) localized but very severe and unseasonal flooding – a couple of metres deep in some places?

Most deciduous trees are able to tolerate inundation of the soil, and even surface water over their roots for some weeks provided the event is during the dormant season (TDA65). At that time the roots are respiring only very slowly and they do not have to absorb water to sustain foliage. (Evergreens will lose water from their leaves even in the winter albeit at a reduced rate making asphyxiation damage more likely.) What will be the effect of recent flooding in the midst of the growing season?

If the water drains away rapidly and the soil is able to return to a seasonally normal condition there may be no visible effect on trees. The longer the water persists the greater the chance of anaerobic conditions developing and the accumulation of deleterious volatile compounds (e.g. methane, hydrogen sulphide) in the soil. Irrespective of such products flooding will have a physical effect on the soil – diffusion of gases into and out of the soil will be impeded or even prevented particularly if there is a deposit of silt over the ground surface. Oxygen levels will decline and damaging gases will increase. Without oxygen the ability of roots to absorb water is greatly reduced. So trees may develop chlorotic leaves that brown and fall early. Prolonged, anaerobic soil conditions may kill trees.

Knowledge of trees may suggest that species able to grow in wet soils will be better equipped to withstand flooding. This does not appear to be endorsed by observations in the field – all species appear to suffer equally from inundation of a site by water. Literature suggests that during the growing season up to 12 days inundation of the soil may be tolerated by healthy trees, but after 21 days 50% of trees died and after a month there was almost total death of the observed tree population! Was this asphyxiation, toxins or Phytophthora?

Defoliated trees should, if possible, be left *in situ* until spring 2008 to give them a chance to reflush, assuming they are able to do so. But will the stability of trees have been affected? If there is erosion of soil from around roots a tree's stability may be compromised. Even if a tree's root system was initially healthy its anchorage may have been compromised. We have received reports of individual trees having been toppled – by recent winds or the weight of water? However, strong winds before leaf-fall or persistence of the flood waters into the windy season may affect the adhesion of soil to the roots and so their anchoring ability. Careful assessment of the root plates of trees that have experienced flooding is needed!

Chesterton in '*Wine and Water*' credits Noah as saying to his wife "*I don't care where the water goes if it doesn't get into the wine*". We cannot afford to be so 'laid back' and we must be aware of the threat flooding poses to trees and be prepared to channel water away from the soil, while making sure anchorage of the tree has not been compromised.

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This is one in an occasional series of Tree Damage Alerts produced for the benefit of the arboricultural profession and issued by the Arboricultural Advisory and Information Service.