Inonotus hispidus

Occurrence

A basidiomycetes that is common and widely distributed in Europe; in this country frequently attacking Ash *(Fraxinus excelsior)*. It is also commonly found on apple, walnut and London plane. A.D.C. Le Sueur writing in 1934 described the fungi as chiefly attacking ash and plane, being of a reddish colour and hairy. Schwarze in 2000 described it as attacking also the pagoda tree and more rarely elm, sycamore and lime.

Fruiting Body

Inonotus hispidus fruiting body relatively fresh

The fruiting body (Sporophore) appearing annually usually in July to September is shaped either like a hoof or a short, thick, broad bracket 10-30 cms across with a shaggy upper surface and a thick spongy fibrous flesh. The brackets have a slightly wavy to lumpy upper side that is initially covered in a felt. At first it is a rusty reddish yellow, when mature an iron rust colour, and when finally old and dead it becomes practically black. The fruiting bodies which develop on the tree while it is alive usually appear at the point of infection.

Old fruiting body in winter

Colonisation Strategy

Infection occurs at a branch stub or pruning wound, the fungi moving from exposed sapwood into the centre of the tree where the rot spreads up and down the heartwood. The infection is often accompanied by bark necrosis and large ribs of wound wood may form along the walls of the bark necrosis on many species e.g. London plane.

Rot Type

In the first stages of attack there are always whitish or yellowish "flames" of discolouration that appear in the wood which are limited by a brown zone. It was shown as early as 1931 by W.G. Campbell in his book The Chemistry of White Rots that the rot is a white-rot type in which both lignin and cellulose are attacked.

Mechanical tests by K. Cartwright et al. (1936) on small examples of wood exposed to infection proved that the toughness of the wood is quickly affected, being reduced by 27% after two weeks exposure. The bending strength of the infected test pieces decreased at a much slower rate than the toughness, only a 14.3% reduction after twelve weeks exposure.

D. Lonsdale in 1999 initially describes the rot type as a simultaneous white-rot destroying both lignin and cellulose at roughly equal rates resulting in a fairly brittle fracture – this description may be particularly linked to ash. He acknowledges that the type of decay may vary depending on the host being invaded and may in some species cause a soft-rot pattern.

Lonsdale and F. Schwarze have identified that in London plane the xylem rays are largely preserved (due to heavy lignifications) whereas, in ash the xylem rays are obviously degraded. This indicates that there is a clear difference with *I. hispidus* in terms of wood degradation and the host specific response. Also Schwarze has demonstrated that the fungi can cause soft rot in London plane, an unusual rot as it is normally exclusively the Ascomycetes and Fungi Imperfecti that cause soft rots.

Arboricultural Significance

The fungus is probably the most important cause of decay in standing ash trees and causes much damage, especially to hedgerow and isolated trees that have lost branches. My experience in Leicestershire (an 'ash' county) is that, considerable numbers of ash trees located on the boundaries of agricultural holdings are infected and this is probably due to the removal of branches (not always to arboricultural standards) by farmers to allow access with agricultural machinery.

Since the ash is used largely for purposes where high strength and great toughness are required, such as in sports goods, any reduction strength is serious. Any timber showing even the slightest signs of decay should be rejected for use.

Due to the clear difference between how the wood of ash is degraded to that of London plane, I. hispidus must be classed as much more dangerous when found on ash than on London plane. Failure of limbs and trunks of ash and walnut is likely to

occur, in London plane the extent and strength of the remaining sound wood may need to be assessed.

There are no appropriate control measures for the fungal decay organism therefore, prevention of the infection by resisting the need to prune trees is required and where this happens that the cuts are made in accordance with current best practices.

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