Pathological Advisory Note

Forest Research

The Health of Yew

Summary

This note looks at the diseases, disorders and pests of the native yew (*Taxus baccata*) and their significance for the health of this species. The tree has very few major, and a limited number of minor problems but there are some for which no causal agents have yet been found.

Introduction

The state of health of the native yew, (*Taxus baccata*) in Britain has been a subject of interest during the last few years along with other native species such as oak and birch. Interestingly, yew does not feature prominently in the massive literature on `Acid Rain', air pollution and diebacks and declines that has poured out of mainland Europe recently. This is probably largely because the yew is essentially an Atlantic species and because man has been so destructive in felling it for its valuable timber that, in many countries, little now remains. Indeed Bean (1980) states that many ancient stands on the Continent have been reduced to stunted remnants or have been exterminated. This Note summarises the knowledge of the pathology and entomology of yew.

Death of whole trees

By far the commonest cause of death of yew is infection by the root-killing fungus *Phytophthora*. The species most frequently recorded is *P. cinnamomi* but *P. cryptogea* and *P. citricola* have also been found. No chemical control is currently available for planted out trees but effective chemicals can be used in nurseries by professional users as described in the Food and Environment Protection Act (MAFF, 1994). The disease is described in more detail, with comments on control measures, by Strouts (1981, 1993). Otherwise death is only known to occur following abiotic damage, for example that caused by waterlogging or the alteration of soil levels during building operations.

Decay

Only three species of fungi have been found causing decay in living yews in this country. The most frequently encountered and by far the most damaging is *Laetiporus sulphureus* which causes a severe, dry, brown cubical heart-rot. It is testimony to the strength of yew timber that even trees severely decayed by this fungus rarely collapse. Much less common are the heart-rots caused by *Ganoderma lucidum* and *G. resinaceum*. These (like *Laetiporus*) seem to enter the tree both via pruning wounds and via roots but next to nothing is known about the extent of decay they can cause in yew and whether, as in other species, they can kill the roots. All three species are described more fully by Burdekin (1979). *Amylostereum laevigatum* has been found causing decay in yew stems which have been topped to reduce the height of a hedge or screen (see also under 'Death of branches' below). As with all decay fungi there is little that can be done after infection has taken place but the potential for infection can be reduced by avoiding extensive stem and branch wounds and following correct procedure for pruning as described by Lonsdale (1983,1992 & 1993).

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Death of branches

Uncommonly but conspicuously, an odd, substantial branch will die on an otherwise healthy tree. the cause is clearly a perennating bark-killing organism which eventually girdles and kills the branch, but all efforts to track it down have so far failed.

Some other instances of dieback of large branches to the main stem have been noted, in these cases followed by prolific production of recovery shoots. No causal agent has yet been found but such damage almost always follows severe winters.

The nondescript fruit bodies of the fungus *Amylostereum laevigatum* (little more than a thin lichen-like crust) are quite common on dead yew bark and one recent case suggests that their significance warrants investigation: many stems in a long-neglected old hedge died soon after an attempt to rejuvenate it was made by cutting it back very hard. The cause seemed to be *A. laevigatum*, which is known to cause similar damage in *Thuja* species (Strouts *et al*, 1986).

Death of small twigs

Girdling lesions have been found on branchlets and small twigs causing slight to moderate dieback. Several fungi have been isolated but none have been proved to cause such injuries.

During late Spring and early Summer some shoots appear to die and there is abscission without any evidence of lesions. These appear to be shoots which have failed to flush in the current or earlier years. Often, but not always, they are inner or shaded shoots. An abiotic cause is suspected for this condition.

In very severe weather, such as occurred during the 1981/2 winter, killing of both needles and alarmingly large numbers of one-year-old shoots may occur. Recovery growth the following spring is often prolific.

On a much smaller scale, one-year-old shoots are sometimes killed by larvae of a small moth, *Ditula angustiorana*, which girdles the twig. This happens in May-June, particularly on clipped hedges, when foliage on the damaged shoots turns yellow before dying back.

Death of discrete patches of twigs in hedges and clipped trees is sometimes caused by bank voles (*Cleithrionomys glareolus*) which gnaw away bark from twigs within the trees. The voles only attack those trees with foliage close to the ground allowing them to climb up undetected and the damage can be up to two metres above the ground. Fortunately such damage is relatively uncommon as little can be done to prevent it.

Galled buds

Both terminal and axillary buds may be attacked by the gall-midge *Taxomyia taxi*. the buds become swollen and later develop into leafy 'artichoke' galls, each containing a single orange larva. Axillary buds may also be galled by the mite *Cecidophyopsis psilaspis* causing them to become swollen and distorted.

Yellowing and loss of needles

This is a condition that has been noted by Forestry Commission pathologists for over 20 years. It affects needles 2 years old and older and is most evident in late June and during July. When the damage is severe only the current and previous year's needles may remain green but shoot

growth on such trees is good. There is a strong link between severe occurrences of this problem and drought years.

Occasionally needle yellowing and death is accompanied by deposits of sooty moulds on the needles and twigs. This indicates the presence of the yew scale insect *Parthenolecanium pomeranicum* which may cause dieback if damage is severe.

Bronzing and death of needles

Following periods of intense cold, often with associated strong winds, needles may show a marked bronzing or may be killed outright. This damage does not seem to affect the subsequent flushing and growth of new shoots. Such bronzing can be very variable with affected and unaffected trees occurring on the same site.

Distortion of shoots and needles

Yew reacts in a characteristic way to certain weedkillers, such as 2,4-D and dicamba, which are frequently used to control broadleaved weeds in grass swards in or near which yews may be growing. The current years needles curve strongly downwards and these may remain green or turn a reddish brown and die depending on the severity of exposure to the weedkiller.

Similar distortion to the above has been found on trees that have never been exposed to weedkillers. In these cases it is usually, but not always, extremely vigorous shoots that are affected and the distortion can be very pronounced. In these cases no death of needles or shoots has been observed and the cause remains a mystery.

Conclusion

Although there is evidence that yew is somewhat unhappy when exposed to severe drought or extreme cold, it has no major pests, only one major killing disease, *Phytophthora*, and one major heart rot, *Laetiporus sulphureus*. It also seems to be immune to Honey fungus while those diseases and disorders for which no cause has yet to be found, do not seem to pose a serious threat to the species. It is clearly a tree with a great deal of natural variability in both form and growth rate and this may have some bearing on the observed differences in reaction of individual plants to the various diseases and disorders. Its very limited list of diseases and disorders, and in particular its apparent immunity to Honey fungus, make it a valuable tree for many planting schemes especially where a native conifer is desirable.

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