

Winter Wash of Trees

If your trees or shrubs suffered badly from insect attack this year i.e. aphid, scale, red spider mite etc., then there is an extremely high probability that insects will be back next year in far greater numbers. This is because most of these insects live for only one year. Consequently towards the end of the growing season they lay their eggs just under the bark or in bark cracks or fissures, which are not visible to the naked eye. When spring arrives, the eggs hatch and the newly born insects continue where their parents left off the following year.

This problem can, however, be controlled during the winter by applying a winter wash. Winter washes are based on a biodegradable oil derived from oil seed rape that is applied to fully dormant trees as a spray or brush that kills overwintering eggs of, for example, aphids, psyllids, scale insects, mealybugs and moths. Winter washes also have the advantage of that they will kill unsightly growths of mosses and lichens on tree trunks and twigs. Consult your local Bartlett Tree Expert for further advice.



Honey Fungus and Root Collar Excavation *by Luke Hailey and Glynn Percival, Ph.D.*

Planting trees too deep with the root collar buried under the soil is a common tree planting mistake. Mulch applied against the trunk can cause problems and may necessitate a root collar excavation. The root collar is where roots originate. In nature the root collar maintains its position from germination so, root collar disorders usually result from bad transplanting practices or the addition of soil or mulch that covers the root collar.

A buried root collar is a vulnerable point of entry for infection of Honey Fungus (*Armillaria mellea*). It is distinguished by brown toadstools appearing at the base of trees in autumn. Also, white mats of mycelium show under the bark of the root and root collar of infected trees. Black "bootlace-like" rhizomorphs spread into the soil and carry water from the soil to the wood. This speeds rot and decay. Once a tree is heavily infected by honey fungus there is no cure, although large trees can survive for many years.

Honey fungus attacks both living and dead wood. It can survive on tree stumps and in buried wood for many years. Infected



RCX is the best option for Honey Fungus.

stumps must be dug out, ground or chipped to prevent the spread of infection. Rhizomorphs can be cut and/or physically blocked with a trench or Deep Root barriers to restrict rhizomorph spread to healthy plants.

Root collar excavation (RCX) is a treatment that removes soil around the root collar using an 'air-spade', a compressed air lance that breaks up compacted soil with minimal damage and disturbance to tree roots. This exposes the root collar to air and sunlight, reducing moisture and increasing temperatures. Both of these factors have been shown to kill or inhibit *A. mellea* in infected wood.

Air-spade RCX has been proven to reduce the spread of Honey Fungus, preventing infections and possibly eradicating it from the soil. RCX has also been shown to combat early stage Honey Fungus infection. It causes the fungus to recede, followed by a return to normal plant growth patterns.

Using air-spade RCX is a two-pronged attack against the spread and early stage prevention of Honey Fungus, especially if the root zone of the entire tree (area under the canopy) is air-spaded.

Treatment can be further strengthened by soil amendments which are applied directly to the roots using the air-spade after the initial decompaction and RCX. These treatments and products improve tree health and speed recovery.

Additional irrigation will reduce drought stress in trees with root systems damaged by root collar disorder. Correct mulching will also help the plant retain water. At this stage it is recommended that any other pest, pathogen or abiotic problems be treated to ensure the optimal chance of recovery.

Continued on page 3

Example of a buried root collar - a common planting mistake.



Disease Alert-

Dealing with *Phytophthora*

by Emma Schaffert and Glynn Percival, Ph.D.

Phytophthora is a genus of 60 species of pathogens classified as oomycetes (water moulds) that cause damage to trees and shrubs globally. *Phytophthora spp.* have been responsible for widespread epidemics with devastating impacts such as *P. infestans* that caused the Irish Potato Famine in 1845. Most recently, *P. Ramorum* (sudden oak death) has had a devastating effect on Japanese Larch forests (over 3 million trees felled) since 2009. The disease spread from infected Rhododendrons and other understory shrubs.

Free water is necessary for *Phytophthora* to successfully infect a tree, therefore, this pathogen is most common in poorly drained soils or that receive excessive irrigation. Consequently, *Phytophthora* can be commonly found on newly developed sites where



soil is severely disturbed or compacted by construction activities. *Phytophthora* is also found in hardy ornamental nursery stock. Infection usually progresses from the root collar or finer roots, into the larger roots and tree trunk. Often this infection will not directly kill the tree, but make the tree more susceptible to other infections and pathogens. *Phytophthora* are seasonally active organisms that are quickly displaced in plant tissues by other fungi and bacteria. They are often difficult to isolate for diagnosis. Distinguishing the exact species of *Phytophthora* can be problematic. Advances in molecular DNA analysis aids in identification, however, such an analysis can prove expensive.

Phytophthora is common on the following tree species:

Aesculus	Cherry	Laurel
Azalea	Dogwood	Lime
Beech	Erica	Rhododendron
Boxwood	Fir	White Pine
Camellia	Hemlock	Yew
Chamaecyparis	Japanese Holly	

Suggested Management Programme for the Suppression of *Phytophthora*

Management strategies should be aimed at promoting tree vitality (treat the patient, not the disease.) Bartlett management strategies would recommend:

1. Ensuring optimal tree nutrition. Sample soils for nutrient and pH levels. Based on soil nutrient analysis results fertilise with the appropriate soil nutrients.

Symptoms of *Phytophthora* Root Rot Vary

Symptoms vary depending on the susceptibility of the plant species, virulence of the specific *Phytophthora* pathogen and site and environmental conditions. Symptoms of infection include a reduction in shoot growth; small leaves, thinning of the crown, chlorosis, twig and branch dieback and eventually death. Diseased roots are reddish brown and brittle. These symptoms are often confined to fine roots and lateral roots. Decline occurs over a period of months or years before death. On some plant species, symptoms do not appear until root or collar rot is advanced.



2. Applying organic matter such as an under composed wood mulch to a 5-10cm depth. Ideally mulches should be applied to 1m beyond the canopy drip line if possible.
3. Guarding against over (and under) irrigation. Monitor soil moisture levels to ensure soil water status is optimal for tree root growth and deters *Phytophthora* development.
4. Using an air-spade to stimulate root growth and de-compact soil.
5. Apply phosphites in early spring. Bartlett research at the University of Reading shows that this is highly beneficial in the suppression of this disease. Treating surrounding susceptible plants on a preventative basis also is recommended.
6. Applying a systemic fungicide as a soil drench.

Phytophthora pathogens have become a widespread problem for many tree species in the UK. Control of *Phytophthora* is demanding. There is no “magic bullet”. Management should rely on promoting tree vitality and alleviating all forms of stress where possible. Our results indicate this will prevent infection and/or allow the tree to recover and survive infection. Many of these strategies are new to professionals involved in management of trees within our towns, cities and parks. Changes to existing management programmes are key to success. If we don’t adapt our current management systems to embrace new technologies to counter *Phytophthora* and other diseases such as Massaria of London plane, sweet chestnut blight, Chalara ash die-back and red band needle blight, then many of our dominant UK landscape trees may follow the way of the elm and disappear over the next 40-60 years.

Evidence of Infection



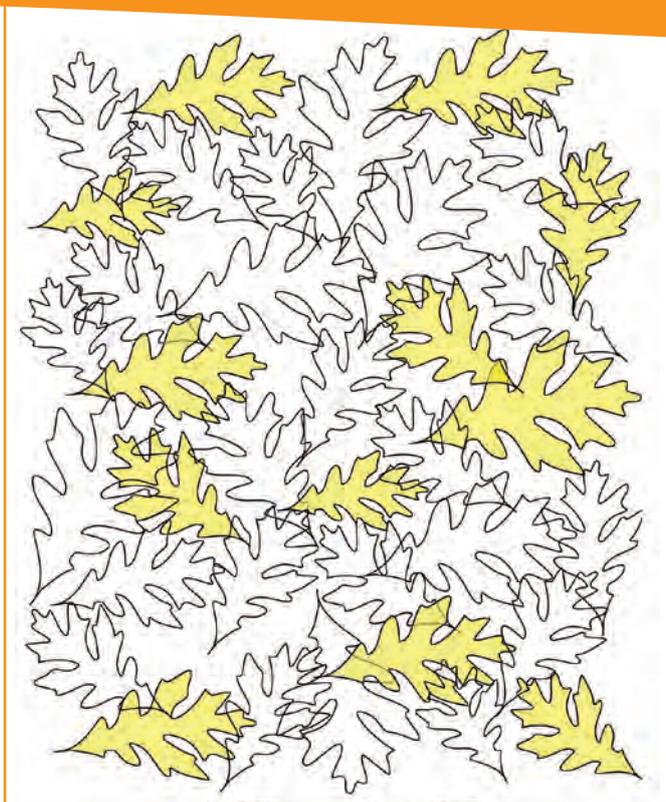
How Many Leaves?

Count the total number of leaves in this drawing.

Check the answers at www.bartlett.com/puzzles or by scanning this QR code with your smartphone.

What's a QR Code?

A type of barcode which you scan with a smart phone to immediately access additional information or a web site. In selected printed material, like *Tree Tips*, we may occasionally include a QR code that will link you to additional information online.



Children's Corner – Summer Project

A Busy, Buzzy Garden

It's a great idea to encourage butterflies and bees into your garden and you can do this by growing a few of their favourite plants to tempt them in. Many butterfly species are becoming scarce and bees are also struggling at the moment, so by growing bee and butterfly friendly plants you can help them to survive. You will need to grow your plants in a sunny place in your garden.



- Place a few pebbles in the base of your planter for drainage and then fill with a mixture of soil and compost.
- Plant the taller plants in the middle, for example: Phlox and Aster.
- Then plant Lavender, Angel's Pincushion and Verbena around the edge.
- You could plant Blue Lobelia at the front edge so as it grows it tumbles over the edge.
- Then you will need to water your tub.
- Other plants you could use to attract butterflies and bees: Broom, Nasturtiums, Primrose, Sweet Williams, Catmint, Petunias and Delphiniums.

Honey Fungus and RCX (continued from page 1)

The resultant hole from deep RCX can be lined with material like perlite, sharp sand or vermiculite to stop soil collapse and provide a growing media around the root collar.

RCXs may require a schedule of maintenance because over time it is important that the root collar remains exposed to allow the greatest effect on reducing fungal infection.

Honey fungus is a notoriously difficult soil borne disease to control. Traditional management included the removal of tree

stumps and major roots. It was an expensive and time consuming process. At present there are no chemical controls for the management of Honey Fungus. RCX does not rely on fungicides, nor does it require expensive equipment. In combination with the application of a *Trichoderma* based bio-control agent long term efficacy against *Armillaria* infection may be possible especially when applied as a preventative measure.

Book Reviews

Trees and Shrubs for Small Spaces

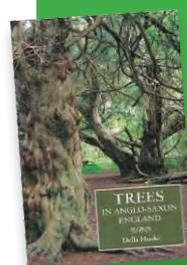
by Diana Miller

Trees and shrubs are a valuable asset to a garden bringing structure, shade, year-round interest and the all-important vertical dimension. However, choosing the right ones for small gardens is a fine art, and it's all too easy to end up with heavyweight shrubs overtaking the border, dysfunctional climbers, or trees outgrowing their designated spaces. Expert Diana Miller takes the anguish out of the process by recommending plants and cultivation techniques that excel in small garden spaces.



Trees in Anglo Saxon England

by Della Hooke



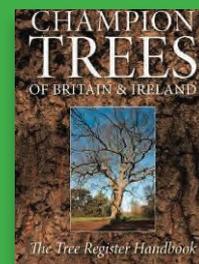
Trees played a particularly important part in the rural economy of Anglo-Saxon England. But they are also powerful icons in many pre-Christian religions, with a degree of tree symbolism

found in Christian scripture too. This wide-ranging book explores both the "real", historical and archaeological evidence of trees and woodland, and trees as they are depicted in Anglo-Saxon literature and legend. Place-name and charter references cast light upon the distribution of particular tree species (mapped here in detail for the first time) and also reflect upon regional character in a period that was fundamental for the evolution of the present landscape.

Champion Trees

by Owen Johnson

What kinds of trees grow where, how long do they live, and how large do they grow? *Champion Trees of Britain and Ireland* answers these questions and more, surveying the finest examples of every kind of tree growing in the British Isles, from ancient yews to towering sequoias.



No Paper - No Problem!

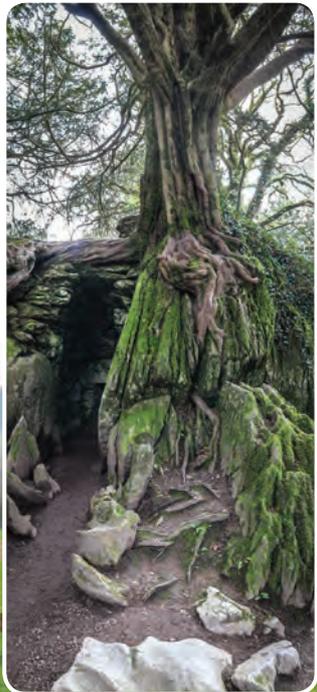
It's easy to enroll in our paperless programme for electronic Tree Tips. Find your 7-digit client code in the yellow box on the back page. Then, log on to www.bartlett.com/newsletter (select UK), click on the registration link and sign up using your client number and postal code. If you ever want paper service again, just advise us.



Bartlett Visits Blarney Castle Gardens

A visit to Blarney Castle Gardens, the home of the world famous Blarney Stone was carried out with Head Gardener, Mr Adam Whitbourn. The purpose of the visit was to examine two lime avenues going into decline. We identified a fungal-like disease on the main Lime avenue, this was later identified in our diagnostic laboratory to be, *Phytophthora citricola* this was present in 90% of the older lime trees in the historic main lime avenue. Treatment for this pathogen is not practical on trees so badly infected, and many of these trees will have to be removed in order to save others on the grounds.

The witches' kitchen



This option is always our least favourite, as it is our goal to preserve rather than remove trees if possible.

Following a short walk through the beautiful gardens at Blarney Castle including a walk through the rock close, up the wishing steps and a short marvel at the yew trees near the witches' kitchen. We arrived at the new lime avenue and observed some stem cracking on the lower stems of all of the trees within the avenue; it became evident that the trees had all been planted too deep. Fortunately there are remedial treatments to improve these conditions. This includes immediate removal of soil and grass at and above the root collar. This may be done via manual means (i.e. trowel). Alternatively Bartlett Research laboratories recommend the use of hypersonic air excavators for this purpose as this causes minimal root and stem disturbance.



Unfortunately, some of the diseased older lime trees can not be saved.

It is our privilege to attend trees and plantings at such a beautiful and historic site. We will be working hard to improve the conditions we described and preserve as many of the plantings as we possibly can.

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Bartlett has recommended remedial treatments for the trees in the new avenue that have cracking on the lower stems due to having been planted too deep.

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