

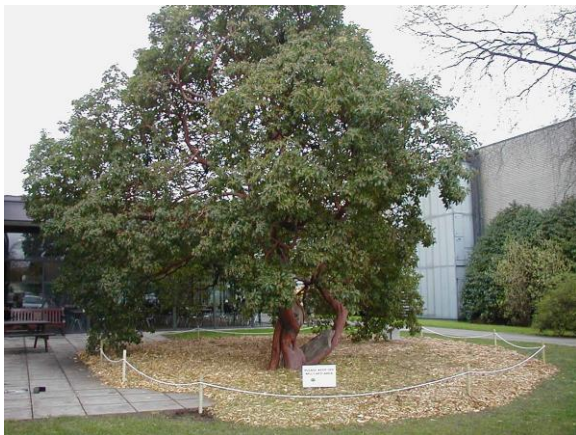
## Mulching

Bartlett UK/Ire Lab Staff

Applying mulch is one of the best arboricultural practices available to improve tree and shrub health. Mulches moderate soil temperatures, reduce soil moisture loss, reduce soil compaction, provide nutrients, improve soil structure, prevent mower and strimmer damage to the tree trunk. These benefits result in greater root growth and healthier plants.

There are many materials that can be used for mulching trees and shrubs. One of the best and most economical is fresh woodchip mulch produced by tree pruning and removal operations. Fresh woodchips are a mixture of wood, bark and leaves. This mixture is desirable because of its carbon:nitrogen (C:N) ratio, which is lower than pure wood-based mulches. Research data confirms no nitrogen tie-up occurs when this type of mulch is applied to the soil surface. Many beneficial fungi grow in mulch derived from hardwood trees.

Figure 1: Correct mulching. Ideally to the dripline of the tree.



Other mulch materials are composted leaves, wood chips, bark nuggets, or pine needles.

Plastic, stone, sawdust, finely shredded bark, and grass clippings should be avoided.

When applying mulch the following guidelines should be observed:

Mulch should be applied from the dripline to near the trunk (Figure 1). If this is not practical, minimum mulch circle diameter be 0.6m for small trees, 2m for medium trees and 6m for large trees.

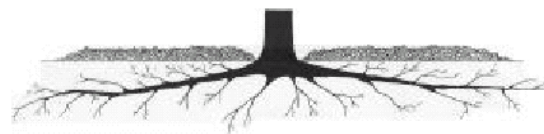


Figure 2: Mulch layer should be 5-10 cm thick and not be against the tree trunk.

Mulch layer should be 5-10 cm thick (Figure 2).

Mulch should never contact the trunk directly (Figure 2). Mulch will retain too much moisture against the trunk that may result in disease and root dysfunctions i.e. girdling roots.

Mulch should taper down to a very thin layer (Figure 2).

Mulch should be applied directly to the soil surface, do not use landscape fabric to separate the mulch from the soil.

Turf does not necessarily need to be killed or removed before mulch is applied. However, grass should be cut short to avoid growing through the mulch. A 5-10 cm layer of mulch will then quickly kill any turf grass thus reducing any need for herbicides. Weed barrier fabric should not be used to prevent weeds from growing up through the layer of woodchip mulch as barriers can interfere with the breakdown of mulch, girdle tree trunks, and affect water movement into the soil.

Weed seeds that germinate on top of mulch can easily be pulled out or they can be treated with an appropriate herbicide such as glyphosate (systemic) or pelargonic acid (contact).

To avoid root disruption for most species mulch should not be removed. Additional mulch should be added to maintain a 5-10 cm depth.

Irrigation practices may need to be adjusted after any type of mulch is applied. Mulch reduces water runoff and slows water infiltration into soil thus reducing soil water loss through evaporation. This is beneficial as the soil below the mulch will dry more slowly assisting in the establishment of transplanted trees and allowing more water to be available in times of drought. On the other hand, in situations where the soil is very dry initially, overhead irrigation may need to be run for a longer period of time and the mulches ability to hold water used to encourage water movement into the soil. In wet soils, irrigation can often be reduced or eliminated because mulch reduces water loss from the soil.

In most cases, fresh woodchip mulches can be used without composting or additional treatment.

### However, there are exceptions to this:

Trees susceptible to insects that are attracted to fresh wounds should not be mulched with fresh chips from the same species. Examples include mulches made of pine in pine bark beetle infested areas, oak in oak wilt areas, and elm in Dutch elm disease areas when the beetles are active. The volatile compounds of fresh woodchip mulch usually dissipate within weeks of placement.

Mulch from trees that produce allelopathic chemicals (natural herbicides) such as black walnut and redwood (*Sequoia*) should not be applied fresh.

Mulches containing wood from honey fungus (*Armillaria*) or *Verticillium* wilt infected trees should not be applied fresh. Although transmission is highly unlikely, these diseases are two of the few shown to be transmitted from fresh woodchip mulch to healthy, susceptible trees.



Established in 1994, The Bartlett Tree Research Laboratories at the University of Reading is the research wing of Bartlett Tree Experts in the UK. Scientists here develop guidelines for all of the Company's services. The Lab also houses a state-of-the-art plant diagnostic clinic and provides vital technical support to Bartlett arborists and field staff for the benefit of our clients.