



Care of trees during hot weather

From Chris Hallwell,

With the UK expecting a mini heat wave next week, with temps set to get to 38-40°C in some places, there's (understandably) been a lot of posts recently about whether people should protect their trees from the sun. Everyone has different species at different stages of development, and different microclimates within their garden so giving stock answers to these questions is difficult (and unwise) and, ultimately it's every individual's choice whether to protect their trees or not. Here are some things to think about which will hopefully be helpful, especially to those newer to the hobby, when trying to make these decisions.

Unlike us, plants use water to cool themselves. In fact around 85% of a plant's water usage goes towards temperature control. Therefore in order to move water through their system and cool themselves they need:

- a) An adequate supply of cool water.
- b) A healthy and robust root system to take in that water.
- c) A healthy and unimpeded vascular system (xylem in this case) to transport that water through the plant, absorbing heat as it goes.
- d) A good amount of foliage transpiring and pulling that water from the roots, through the plant and ultimately out into the atmosphere.
- e) Exposure to temperatures that they can adequately achieve, and maintain this cooling process throughout the day.

So when asking yourself "do I need to protect my trees from the upcoming heat?", consider these points:

1. Can you provide adequate watering? You may need to water several times (including wetting/misting the foliage) throughout the day. Tied in to this is how big are the pots your trees are in (larger pots = larger reservoir of water) and what substrates are you using (aggregate substrates drying out faster but organic soils becoming more hydrophobic when allowed to dry too much).
2. What species do you have and how tolerant are they to heat? Generally people think of species like pines and junipers as very heat tolerant (assuming the above criteria are present) and broad leaf deciduous trees as more susceptible due to environmental adaptations such as a thicker cuticle on the foliage and thicker bark on the trunk and branches. And for the most part this is true. However another way to look at it is 'how quickly can that tree move water through its system and cool itself?' Conifers move water far less quickly than elongating species and deciduous conifers which, in turn, move water far less quickly than broad leaf deciduous trees. Interestingly the US had a heatwave in 2021 and a number of professional bonsai gardens/nurseries (so able to water as much and as often as they needed) noticed that the most significant damage was to species like Ponderosa pines, which you would normally think would be some of the most heat tolerant. They concluded that this was likely due to the fact that these pines simply couldn't move water fast enough to cool themselves adequately. Now they experienced temps around 47°C with significantly greater UV intensity than the UK typically gets, but still an interesting observation.

3. What temperatures and environmental factors are your trees going to experience throughout the day? Some parts of the country will obviously be warmer than others and each garden will have a different orientation, availability of natural shade, wind etc. Monday and Tuesday will see very high day time temperatures but also sustained high temps through the following night times (27°C where I am in the South East). This is relevant as the trees will not have the chance to cool down as well throughout the nights.

4. Have you recently styled, pruned or repotted your trees? The greatest root regeneration following repots happens in the autumn so trees that were repotted in spring may still have an impaired ability to take up water at high rates. Heavily pruned trees may not have enough foliage transpiring to pull enough water through the system to maintain cooling at the higher temps. Recently styled trees may have had their vascular system compromised to one degree or another and this may impact their ability to move water through that system. Freshly exposed branches and areas of trunk are also equally susceptible to damage from the sun.

5. How acclimatised are your trees? Have they been outside in full sun all year so far? If not then they will be even more susceptible to extremes of sun and heat.

6. Don't forget the roots! We always focus on heat damage to the foliage but the roots are also susceptible to high temperatures developing within the container. It may be worth protecting the south facing side of the containers either with tin foil or a wooden board (if you have a row of pots of similar heights).

7. Make sure you run the hot water from the hose out before you water your trees. The water within the hose can heat considerably, even on a 'normal' summers day and the cooler the water you apply the greater amount of heat it will be able to absorb from the plant as it passes through.

Due to work and being unable to water as often as I would like, I will be protecting my trees with shade in the form of pre-existing structures like fences and hedge lines and shading my benches with parasols (I do not have a permanent shade structure). My advice to anyone worried about the upcoming heat is, water your trees as well as you can, protect your pots (roots) and if in doubt, protect your trees with shade however you can. Two days in shade will do no harm whatsoever but one day in 38°C heat could cause significant damage and/or be the end of that tree.

A little long of a post but hope this helps and 🙌🙌🙌 everyone's trees make it through unscathed!

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