



Tree/Shrub of the month:

Quercus robur / oak — I recently visited Wistman’s Wood on Dartmoor. We hadn’t been for several years so it was good to see it again and imbue its magical atmosphere. These oaks are reputed to have been remnants of woodland growing on Dartmoor since c. 7000 BC. The oldest oaks are estimated to be 400—500 years old. It is well worth a look.



THANK YOU:

I would like to thank everybody for their patience last year when I dislocated my shoulder. It is all back in working order now thanks to the amazing medical staff at the RD & E and the support of my co-workers Mark, Joss and James.

NIWAKI (translation from Japanese—Garden Tree):



We have been busy this last year with increasing our commitment to producing Niwaki plants and have installed a propagation unit so as to be able to have control over obtaining the right clones for this. Above are luma’s, box, pieris, osmanthus, phillyrea and eucryphia. Below—working on some bays and osmanthus.



We use a lot of mulch which has worked amazingly well at enriching the thin, sandy soil here, keeping the weeds down and moisture in. We didn’t water any of these plants over the whole of the summer and you could see that there

was still moisture in the soil below the mulch, despite the high temperatures and lack of rain.



Above are the plants that we containerised earlier on in the year. Below are some willows we planted last autumn, some of which have grown over 15 feet tall. We plan to coppice them



to create a single species mulch. Dr Glynn Percival has carried out research on mulches and has found that Willow tissue is naturally high in salicylic acid “a powerful stimulator of plant defence pathways”. As the mulch breaks down the salicylic acid is released and when in contact with the plant can cause the production of antibodies, defensive enzymes, phenolic acids, tannins and increased leaf thickness. Mulches increase the

microbial activity and can reduce soil pathogens through direct competition for resources and chemical inhibition. Mulch should be used around trees and shrubs but do not allow it to

build up around the trunks—these need air so as not to encourage adventitious rooting or diseases because of anaerobic conditions caused by the mulch holding water around the trunk. The mulch should be 80—100mm deep and allowed to decompose before adding more. Practically this means every 3—4 years depending on your soil and the speed of decomposition.

Not all fungi are bad for trees:

Mycorrhizal fungi form symbiotic relationships with trees receiving sugars and other compounds and in return supply water and nutrients, particularly phosphorus as well as nitrogen. They are found in a large majority of trees, although some can grow without them. There are various types of mycorrhizal fungi and the ones found on trees are in two main forms those that grow inside and those that exist both internally and externally. The external ones are typically found on nutrient rich soils and help the tree by increasing the effective surface area of the roots - the hyphae spread out into the soil absorbing water and nutrients. It is a good deal for the tree as the fungus takes only 2—15% of carbon fixed by the tree during photosynthesis. In contrast the internal ones are more often found at higher latitudes on colder soils where the fungus breaks down the leaf litter and passes it onto the tree. This takes more energy, up to 20% of the carbon fixed by the tree, but the scarcity of nitrogen can make it worthwhile as it would take more energy for the tree to grow the equivalent area of roots. They can also help in establishment of seedlings. There are an estimated 400,000 species of plants on the planet and probably at least as many species of fungi associated with their roots.



Fly agaric—this fungus often forms mycorrhizal associations with birch and pine on light soils. This is one from a garden in Budleigh associated with birches.

So don't be alarmed if you see a lot of fruiting bodies appear out of mulched areas they are unlikely to be parasitic.

It has been noted that there are signs of malnutrition in forest trees and a ten year European study led by Imperial College London and Kew researchers have shown that tree characteristics and local air and soil quality have a large impact on mycorrhizae. A large study of 13, 000 soil samples taken from 20

European countries has revealed that many tree mycorrhizal fungi are being effected by the pollution levels present. Because the trees are malnourished it leaves them vulnerable to pest and disease. The lead researcher Professor Bidartondo says that European pollution limits may be set far too high. In North America the limits are set much lower. Minerals such as nitrogen and phosphorus are essential for growth but in high enough concentrations can be damaging and change the populations of mycorrhizae allowing in those more tolerant of pollution that may take carbon but give little back to the trees. The majority of mycorrhizae are specialists and only associate with certain types of tree. <https://www.imperial.ac.uk/news/186573/pollution-hits-fungi-that-nourish-european/> Lynne Boddy says that there is no doubt that the ecosystems of Earth could not function without fungi. She says that about 90% of plants depend on fungi forming mutually beneficial associations with their roots, in a book edited by her and Max Coleman "From Another Kingdom"

To encourage a healthy relationship between tree and mycorrhizal fungi don't use fungicides, reduce the amount of manure, fertilizer and cultivation and increase humus levels by using, for example, woodchip mulch.

Tools and the environment: we have been investing over the last year in battery hedge trimmers, blower and saw. They are quiet, which is nice for the surrounding neighbours, as well as producing no fumes. They also create less vibration—which can give the operator white finger with prolonged use. The chainsaw is for climbing and is much easier to use up the tree because there is no pull start, again, no fumes and quiet. We also use silky hand saws wherever possible because they give such a neat, clean cut. There have been days where the only noise is the chipper being used. I have several batteries which are charged at home using renewable energy. However, there are jobs where it is unavoidable to use petrol saws as they are more powerful, so we've not completely done with petrol, yet.