British Mycological Society promoting fungal science

What's your favourite fungus?

The One That Digests All the Old Timber

Ever wondered what happens to all the leaves that fall from the trees, or the branches that fall to the ground in storms, or when a tree dies? Somehow there's never a build up of all this organic matter, but what happens to it? Where does it go?

Many organisms like bacteria, insects, worms and many fungi are involved in the break down the plant material. Humus is the term used to describe material once it has been broken down; it is nutrient rich and can be used by plants for their growth.

Plant tissues are very strong. The components that provide the strength are cellulose and lignin. Fungi are very important for the decay of wood because they are the only organisms capable of breaking down **BOTH** cellulose and lignin.

Cellulose is a polymer of glucose that forms fibres which are incredibly strong. Brown rot fungi are responsible for the breakdown of cellulose. Brown rot fungi are so called because the lignin remains intact so the wood keeps its brown colour. The enzymes released by brown rot fungi break the cellulose chains into single molecules of glucose that can be re-used by the fungus.

Lignin is the other strong polymer. It is the second most abundant natural polymer on earth after cellulose. The fungi that break down lignin are called white rot fungi; this is because as the content of lignin is decreased, the wood becomes lighter in colour. White rot fungi degrade lignin by producing oxidising enzymes that are released from their hyphae – they 'burn' the wood in an enzyme-controlled way. Lignin contains phenols and the white rot fungi are the only organisms that can deal with them.

These two types of fungi have important roles in the recycling of nutrients. Without them, old plant material would not decay and the soil nutrients would be locked into an accumulating mass of undegradable biomass.