

Growing Media REVIEW

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Moving on from peat: Responsibly sourced growing media



Wood fibre: an American perspective



Predicting performance of
growing media blends



Success in the supply chain

All things fibre

Similarly to the UK, the horticulture industry in the USA has been researching and using non-peat media for many years but, as Brian Jackson explains, the reason is an entirely commercial one

The vast majority of the peat used by growers in the USA is harvested from Canada, so the haulage makes the product relatively expensive – and although of good quality, it’s also of a finer structure than the peat used in the UK and Europe.

The USA may not have much in the way of peat reserves, but one resource it is not short of is trees. Its forestry industry is on such a scale that by-products in the form of bark, wood chips and wood fibre are in abundance and used extensively in growing media to supplement or sometimes completely replace peat. A range of tree species is used; mostly larches, pines and spruces.

Brian Jackson, Associate Professor in substrate science at North Carolina State University, has spent much of his career investigating the use of wood-based products in growing media and has a particular expertise in wood fibre. According to him, although a number of variables can affect the end product – such as the tree species and age, the moisture content of the wood, and the age and size of the wood chips used to make the fibre – the production process can be managed for consistency.

“The species and age of the tree can be specified, as can the initial process of shredding or chipping the wood,” he says. “Then the actual method of creating the wood fibre can be selected, which can produce fibre that is either chip-like, fluffy in texture or more strand-like in varying lengths, depending on the final specification for use, such as fine chips to replace the use of perlite.”

Wood fibre is currently manufactured using three main types of machinery, each giving a unique product: hammer mills (used extensively in the USA), twin disc refiners and extruders. The output from each can also vary, depending on the chosen speed of operation and the size of the holes in the grading sieve.

According to Jackson, wood fibre has a number of properties that make it particularly suitable as a growing medium: “For a start, it’s less hydrophobic than peat, making it easier to wet up when dry and giving it good hydration characteristics – adding 10 per cent wood fibre to a growing medium increases its wettability when dry by up to 50 per cent. And as a result of the material’s fibrous nature, water is able to move as easily laterally as it is vertically within a medium containing wood fibre.”

Depending on the tree species, freshly harvested wood fibre can have a pH of around 4.5 to 5.5. “But wood fibre has less buffering capacity than peat, so pH changes can be more rapid, necessitating more careful management of media with high wood fibre contents,” he says. “However, the low-salt content and EC levels relative to other raw materials mean raw wood fibre is inert, providing a blank canvass on which to work.”

The physical structure created by incorporating wood fibre into a growing medium creates an environment that encourages good root development and growth. “The high humidity levels within the fibre and the fibrous nature of the material itself enable roots to develop unimpeded,” explains Jackson.

Some characteristics need careful management, though. Wood fibre needs to be blended and mixed correctly to

Brian Jackson was speaking at an AHDB workshop on developing new blends of growing media for horticulture in September 2017. His webinar, “Whole hog about whole tree-based substrates” featuring many of the topics covered in this article, can be found on the e-GRO website (www.e-gro.org).

avoid it simply ‘flocking’ into lumps within the growing medium.

It can be prone to shrinkage in containers if an appropriate moisture content hasn’t been maintained. Jackson says no significant slumping has been reported by growers of protected crops but it can occur with longer-term crops, such as nursery stock, especially when wood fibre is incorporated at higher rates, although this hasn’t been found to be detrimental to crop quality.

Not maturing the wood fibre for long enough before use may result in pH-induced deficiencies in both short- and long-term crops, protected and outdoors.

