

Peat use in horticulture and environmental concerns.

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History of potting composts

Traditionally gardeners and growers made their own potting compost by utilising locally available materials such as leaf mould, animal manure, spent hops, sand and grit. As the horticultural industry developed, the need for standardised composts grew and in the 1930's Lawrence and Newell developed the first commercially available standardised compost in the UK. Known as 'John Innes' mixes they were made from blends of 'loam' (composted grass turves), peat and sand. However, quality loam was both difficult to source and heavy, making transport and handling expensive for a developing horticultural industry. In the 1970's, peat became a logical replacement for loam as it was light, cheap and easily available in western Europe. Where peat is not so readily available eg Australia and North America, bark based mixes are common. When changing potting compost, the period of transition and familiarisation should not be underestimated. It probably took 10-15 years for people to be confident in using the peat dominated mixes.

Properties of peat

Peat has many properties that make it an ideal constituent of a potting compost, generally it is low in nutrients, has a low pH, low bulk density, a useful cation exchange capacity and a good air-filled porosity value. These properties tend to make peat a very flexible material that can be adapted for most plants. Not all peat types are suitable for use in horticulture and the statement made by some that peat is the panacea is ill-founded. Each peat type has a unique set of properties (including the degree of decomposition, botanical composition and the amount of nutrient in the forming peat) and these affect whether it is suitable for use in potting compost and how it subsequently performs as a potting compost.

Peat harvesting

Preparing a peat bog for commercial extraction can take up to 6 years as all surface vegetation has to be cleared and the site has to be drained. Traditionally, peat was hand cut but increased demand has led to mechanised production. In many instances it is the draining of the bog that causes the most harm, in many instances this can impact upon surrounding areas thus damaging the water balance across a wider area than the intended bog.

The UK peat resource

Peat extraction for horticulture focuses on lowland raised bogs, it is estimated that there is around 70,000 ha in Great Britain of which only around 9,000 ha remain as either near natural or primary degraded bog making it an extremely rare habitat.

Lowland raised bogs tend to be characterised by poor drainage which result in waterlogged anaerobic conditions leading to the accumulation of peat. Continued accrual of peat elevates the bog surface to form a gently curving dome which is 'raised' as much as 12 metres above the regional groundwater level. Raised bogs are ombrotrophic, which means that they depend entirely upon rainfall for their water and nutrients.

Biological and habitat value of peatlands

Raised bogs occur in cool, poorly drained basinsⁱ. The peat is acid and low in nutrients, and supports a low biodiversity but unique vegetation dominated by *Sphagnum* moss species and the cotton grasses *Eriophorum* spp. Lowland raised bogs also support a number of higher plants scarce in the lowlands including bog rosemary *Andromeda polifolia*, great sundew *Drosera anglica* and cranberry *Vaccinium oxycoccos*. Raised bogs provide a unique record of vegetation change over the last millennia, and are of great archaeological importance.

Blanket bogsⁱⁱ are notable for their cover of heather, cross-leaved heath, cotton grass and several of the bog moss *Sphagnum* species, and are important habitats for rare birds such as the red-throated diver *Gavia stellata* and golden plover *Pluvialis apricaria*.

Environmental concerns

In the 1980's initial arguments to stop using peat in horticulture focused on concerns associated with the damage commercial peat extraction caused to natural habitats, the potential damage to archaeological artefacts (preserved within the peat body), that peat extraction contributed to CO₂ emissions (and therefore climate change) as well as issues associated with fresh water cycling.

In the 1990's, environmental auditing began to focus attention on the importance of peatland as a carbon store and hence its role in both adapting to and mitigating climate change. Peatlands in the UK are believed to store more carbon than the forests of the UK and France combined. Although the carbon dynamics of peatlands are complicated and often site-specific, the large quantity of carbon stored in peatlands is incontrovertible, as is the need to keep this carbon stored.

Widely differing views on the sustainability of peat harvesting have been expressed. Peat forms at only ca. 1 mm per annum but modern peat extraction methods can remove up to 22.5 cm of peat per annum (in successive passes). Many regard this as unsustainable for any biogeographic region. On the other hand, some industry interests have widely promoted the principle that horticultural peat use is insignificant in the context of global peat formation, ignoring the biodiversity and archaeological values that are specific to individual biogeographic regions. There is now a much better understanding and acceptance of the need for sustainability to be assessed with more sophistication than at the gross, global level.

Amount of peat used in horticulture

There are some usage figures available with regards to peat and peat-free potting composts in UK horticulture (both amateur and professional use). Interpreting these figures and the trends they illustrate is complicated. Weather plays a significant factor as it affects the harvesting of peat (wet weather reduces the amount of peat harvested) as well as affecting the purchase of potting compost by gardeners (a wet spring / summer can reduce sales). When poor weather reduces the amount of peat being harvested there is often an increase in the use of other (peat-free) materials. Despite the need for caution there would appear to have been a steady increase in the amount of peat-free material being used in the UK since 1999.

In 1999 the total potting compost used in horticulture in the UK was ~3.47 million m³ with peat use being ~ 3.27 million m³. In terms of peat, the amateur market used 2.13 million m³ while the professional market (commercial growers) used 1.14 million m³. In terms of peat-free material, in 1999 the amateur market used 0.14 m m³ while the commercial growers used 0.06 m m³.

In 2012 total potting compost used in horticulture in the UK was ~ 3.9 million m³ with peat use being ~ 2.2 million m³. In terms of peat, the amateur market used 1.4 million m³ while the professional market (commercial growers) used 0.8 million m³. In terms of peat-free material, in 2012 the amateur market used 1.3 m³ while the commercial growers used 0.4 m³.

UK Government and the horticultural industry

In 2011 UK Government published a White Paper on the Environmentⁱⁱⁱ which contained voluntary targets for the end of peat use in horticulture. The Government's aspiration was for all public procurement to be peat-free by 2015, all amateur retail potting compost to be peat-free by 2020 and all commercial potting compost to be peat-free by 2030.

In response to this, the industry and Defra came together as the Sustainable Growing Media Task Force (SGMTF) with all stakeholders involved (potting compost manufacturers, retailers, growers, NGO's etc). The SGMTF proposed a "road map"^{iv} to government for how they would take the issue forward and established a number of working groups to examine different aspects of the debate and submitted a report detailing these points to government.

The Government response to the report was positive, it thanked the SGMTF and in Jan 2013 called for the establishment of the current Growing Media Panel (GMP) to oversee the delivery of the proposed road map within a five year period. The GMP also being made up of industry representative stakeholders.

Several elements of the road map will be of interest to the gardener. These include:

- 1) Developing a performance standard for multi-purpose compost
- 2) Establishing a set of responsible sourcing and manufacturing criteria for ingredients
- 3) Agreeing standardised labelling guidelines

If these points can be delivered by 2018 then the consumer should be able to buy bagged compost that they have confidence in its performance, confidence in that it has been responsibly sourced and they know what is in the bag and how to get the best out of it.

Since this was written, progress on eliminating peat has been disappointing. The Committee on Climate Change's [Land use: Policies for a Net Zero UK](#) report published at the end of January 2020 makes sweeping recommendations to reduce carbon emissions. These include increasing forest cover by 30% and big changes to agriculture, but for us the most important section deals with peat. Peatlands should be net absorbers of CO₂, but emissions from our damaged peatlands were estimated at 23 million tons in 2017. The report calls for a complete ban on peat extraction and its sale, *including of imports*, before 2023.

There are now excellent peat-free composts available, but this we are importing nearly half a million tons each year from Ireland. We hope that this latest report, which emphasises the climate change benefits, will put some teeth into legislation originally more concerned with saving biodiversity.

ⁱ http://jncc.defra.gov.uk/Docs/UKBAP_BAPHabitats-31-LowlandRaisedBog.doc

ⁱⁱ http://jncc.defra.gov.uk/Docs/UKBAP_BAPHabitats-03-BlanketBog.doc

ⁱⁱⁱ <https://www.gov.uk/government/publications/the-natural-choice-securing-the-value-of-nature>

^{iv} https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221019/pb13867-towards-sustainable-growing-media.pdf