



Department
for Environment
Food & Rural Affairs

Growing Media Monitor Report

TRENDS IN THE COMPOSITION OF UK
GROWING MEDIA SUPPLIED 2011 TO 2021

Summary

Peat as a proportion of growing media fell from 41% in 2020 to 36% of total volume in 2021. In terms of volumes, 600,000 cubic metres less peat was supplied in 2021 than 2020. This was due to a continuing trajectory of peat removal from the supply chain, and a return to more normal gardening demand in 2021 after a 2020 boom in lockdown gardening.

Increasing specification of peat free by retailers, growing proficiency in manufacturing peat-free product, and the lack of availability of peat from the Republic of Ireland are now rapidly accelerating peat removal from the retail sector. In the professional sector, there has also been substantial downward movement in the proportion and volume of peat used for the first time in a decade. There are still significant technical barriers to removing peat from some horticultural crops, processes and forms (for instance plug plant production, transplant, blocking, mushrooms, and ericaceous plants).

Critical success factors for further accelerated removal of peat include the availability of alternatives. Whilst use of wood-based materials such as wood fibre has increased, competition for this raw material with other industries remains intense. Use of coir fell in 2021 compared with 2020, which illustrates some of the challenges and vulnerabilities in the supply chain of peat alternatives for UK growing media.



RETAIL	2019	2020	2021
Growing media	3.15 m ³	4.28 m ³	3.43 m ³
Peat	1.30 m ³	1.52 m ³	1.02 m ³
Other materials	1.84 m ³	2.76 m ³	2.41 m ³
Percentage peat	41.5%	35.5%	29.8%

(Volumes in millions of cubic metres)

PROFESSIONAL	2019	2020	2021
Growing media	1.12 m ³	1.16 m ³	1.21m ³
Peat	0.76 m ³	0.72 m ³	0.63 m ³
Other materials	0.36 m ³	0.44 m ³	0.59 m ³
Percentage peat	67.8%	62.3%	51.7%

(Volumes in millions of cubic metres)

ALL (INC. EXPORTS)	2019	2020	2021
Growing media	4.40 m ³	5.59 m ³	4.77 m ³
Peat	2.10 m ³	2.29 m ³	1.69 m ³
Other materials	2.30 m ³	3.30 m ³	3.08 m ³
Percentage peat	47.6%	41.0%	35.5%

(Volumes in millions of cubic metres)

Introduction

This report provides the results of the 2020 joint Defra, AHDB, GMA and HTA growing media monitoring study. It takes the available data in the time series from 2011 up to 2021. The study reviews the make up of growing media sold by manufacturers to the UK's retail, professional use and export sectors. The study measures and tracks the proportion and volume of ingredients used in growing media over time.

The study, funded by the Growing Media Association (GMA), Horticultural Trades Association (HTA), the Department for Environment, Food and Rural Affairs (Defra), and the Agriculture and Horticulture Development Board (AHDB), forms part of the work undertaken in the UK to maximise the sustainability of growing media. This builds on several years' work, which includes support for research and development into peat-free and reduced-peat mixes funded by Defra and the AHDB within CP 138 'Transition towards responsibly sourced growing media in UK horticulture' which culminated in a model to predict the performance of raw materials and blends.

Growing Media manufacturers, working with environmental NGOs and Defra, have also developed and in 2022 launched the Responsible Sourcing Scheme for Growing Media. Signage and labelling for the scheme now appears on growing media product on sale in garden retailers. The scheme and the calculator behind it assesses the environmental and social impacts of different ingredients in growing media against a range of criteria, helping the industry assess the overall footprint of its products on the taking into the account all ingredients in a product.

Research published by Oxford Economics highlights that the UK's horticulture and landscaping industry contributes £24 billion to the UK's GDP and supports (directly or indirectly) around 1 in 62 jobs in the UK economy. Much of this is supported by and to some extent dependent on growing media. Without sufficient high-performing growing media commercial plant production in the UK is constrained. In the

amateur sector without sufficient good quality growing media available in retail sales of items such as seeds, plants, and the containers which depend on growing media for their utility are likely to fall.

Access for UK growers to good quality growing media is essential in maintaining competitiveness against overseas suppliers to the UK horticulture market. At no point in time over recent years has this been more apparent than in 2020 and 2021, where the Covid-19 pandemic lockdowns have driven a huge increase in participation in gardening placing unprecedented demands on the horticulture supply chain. This report, published as the UK emerges from pandemic related restrictions, paints a picture of the changing use of raw materials on which the industry relies to deliver these benefits to the UK's economy and environment. The report also discusses some of the trends and market forces affecting the reported numbers.





Approach

Research Objectives

The following objectives were established for the purpose of this research:

1. To measure and track over time the volume of growing media supplied by growing media manufacturers for retail and to professional customers, and for export
2. To measure and track over time the composition of this growing media in terms of the ingredients used
3. To provide a short explanatory commentary on the data and trends that affect the data

Method and Sample

For around twenty years the growing media industry has collated data on the use of ingredients in its product. In 2012 a new project and method was developed with funding from the industry, Defra and the AHDB. This project ran to 2016, and provided data from 2011 to 2015. The project was re-commissioned in 2018 providing comparable data from 2011 to 2015, and 2018 to 2021.

To identify an appropriate sample for the research, the GMA conducted an audit of supply to the UK market based on their collective market knowledge and competitive intelligence. All companies so identified were approached to take part in the research, with most taking part. Over nearly a decade the market landscape has changed through acquisitions and mergers, but on the whole there have been few drop-outs or

refusals to participate. Appendix 1 details businesses which submitted data for the 2018, 2019, 2020 and 2021 waves of this research and sampling considerations.

The data from manufacturers is collected by an independent consultant Paul Waller Consulting (PWC), and is provided on a confidential and anonymous basis. Participating companies provide a completed spreadsheet template to PWC detailing the volume of different growing media components that they used in their UK sales. On receipt of the data, PWC checks submissions for anomalies and clarifies these with participating companies, and PWC's work is then audited to check for errors or anomalies. Company level data is not shared with either Defra, the AHDB, HTA or the GMA. Each participating company in the study is provided with an output which shows their own business' performance relative to the average position for the industry. In 2021 minor changes to the methodology were made. Firstly, some product categories were adjusted. This was designed to give more detail on peat-free categories which had previously been recorded only as a single reporting unit, and to ensure comparability between trends in peat-free and peat-based products. The second was to include volume data on products such as soil improvers which do not contain peat. Previously only products of this nature that contained peat were included. However, to ensure the validity of year-on-year trends, the charts and analyses are all prepared on the basis that this volume is excluded from calculations. The data is available in the detailed data set that accompanies this report, and in future years will be used for time series analysis.

Findings

The study provides detail separately on growing media for use by professional customers (e.g. commercial growers) and for retail (e.g. that sold to the general public). Full data for this report is on hta.org.uk/growingmedia or by email from media.office@hta.org.uk

Retail sector findings

The key context for the 2021 data is a reduction in overall volumes of growing media supplied to the market in 2021 compared with the pandemic-driven boom in gardening in 2020. In the summer and autumn of 2020 consumer demand for garden products saw unprecedented levels of growth due to the pandemic lockdown. On the supply side of the growing media market, 2020 saw suppliers struggle to increase output to supply this demand. This scarcity of supply prompted retailers to order for the 2021 season earlier in late 2020 to ensure (and in some cases stockpile) growing media for the 2021 season. Therefore, the 2020 figures are likely to include volume that retailed in 2020 and 2021, and in this context it is

no surprise that the 2021 manufacturer sales data in this report show a significant fall on 2020 data. However, in spite of this, volumes overall are still in excess of those supplied in 2019, which reflects a buoyant gardening market overall. In 2020, although the proportion of growing media accounted for by peat fell to 35.5% from 41.5%, the volume of peat used had increased to 1.52m cubic metres from 1.31m cubic metres. In 2021 more 'normal' conditions returned to the market. The proportion of growing media accounted for by peat continued its downward trend, with peat now accounting for 29.8% of volume supplied to retail. In terms of absolute volume, peat in 2021 accounted for 1.02m cubic metres in retail, a reduction of 0.5m cubic metres of peat between 2020 and 2021 and of 0.3m cubic metres compared with 2019 (charts 1 and 2). Indeed, peat is no longer the most voluminous source ingredient for retail growing media, with wood-based materials (mainly wood fibres derived from wood chip) accounting for 30% of volume. Coir volumes fell compared with 2020, which is perhaps interesting in the context of a move away from peat. However, this is likely to be explained by both the overall fall in volume of growing media supplied, and the particular difficulties in sourcing coir from Sri-Lanka and India in 2021 given the severe impacts of Coronavirus lockdowns in these countries in 2021 which affected both production and the global shipping capacity on which supply of coir to the UK relies.

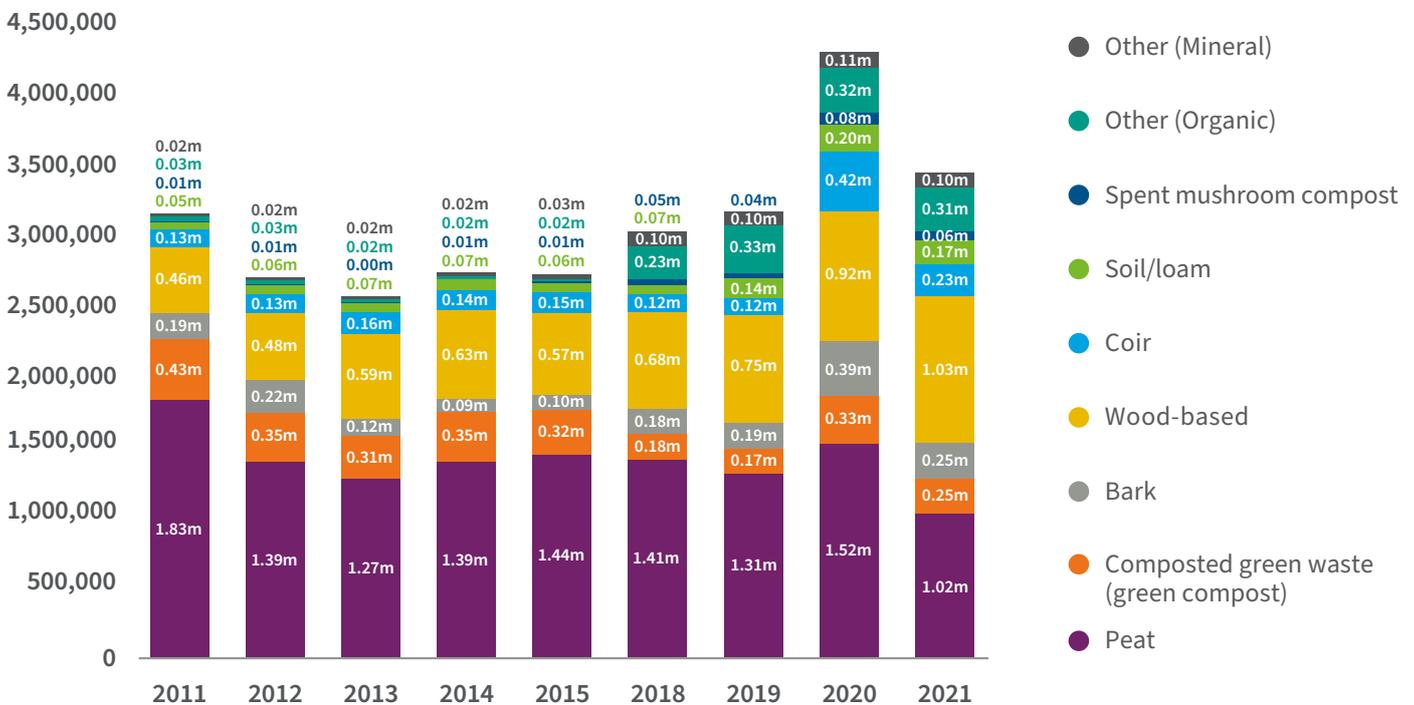


Chart 1: Overall volume (cubic metres) of ingredients in growing media in retail sector between 2011-2021

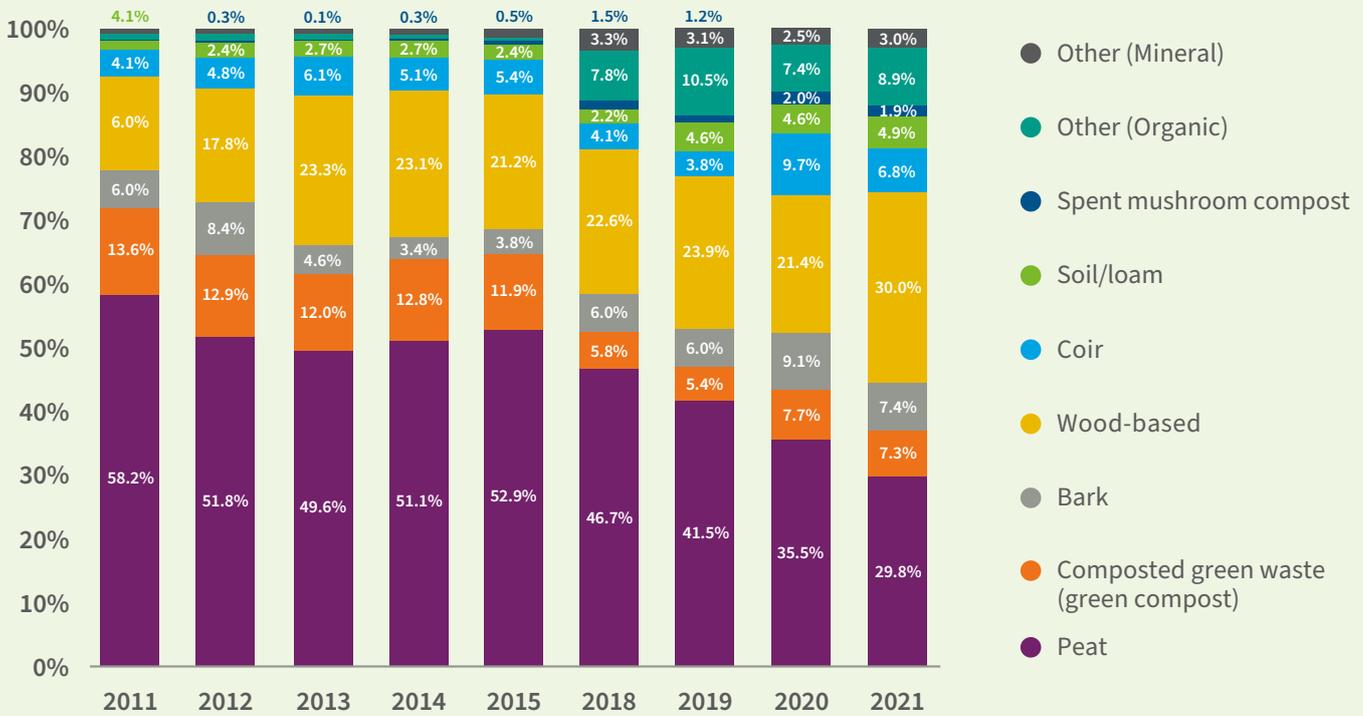


Chart 2: Total volume (%) of ingredients used in growing media in retail sector between 2011-2021

In terms of product and category level analysis, peat-free products have continued to gain market share in 2021. In spite of the overall fall in volumes of growing media supplied to the market in 2021, peat-free product increased its volume from 0.54m cubic metres to 0.67m cubic metres – a 25% increase in volume. Over 2021 peat-free products accounted for 19.5% of the volume supplied, compared with 12.6% in 2020 (charts 3 and 4). Whilst this has played a big part in the overall reduction

in the use of peat in the retail sector, it is not the sole driver of change. In the 2.07m cubic metres of peat-based multipurpose growing media supplied in 2021 for example, 0.83m cubic metres of this was made up of peat (40%); the equivalent proportion in 2020 was 44%. This is significant insofar as peat-based multipurpose product accounted for 60% of the volume sold into retail in 2021, and so movements in this category have a disproportionately high impact on overall peat supply.

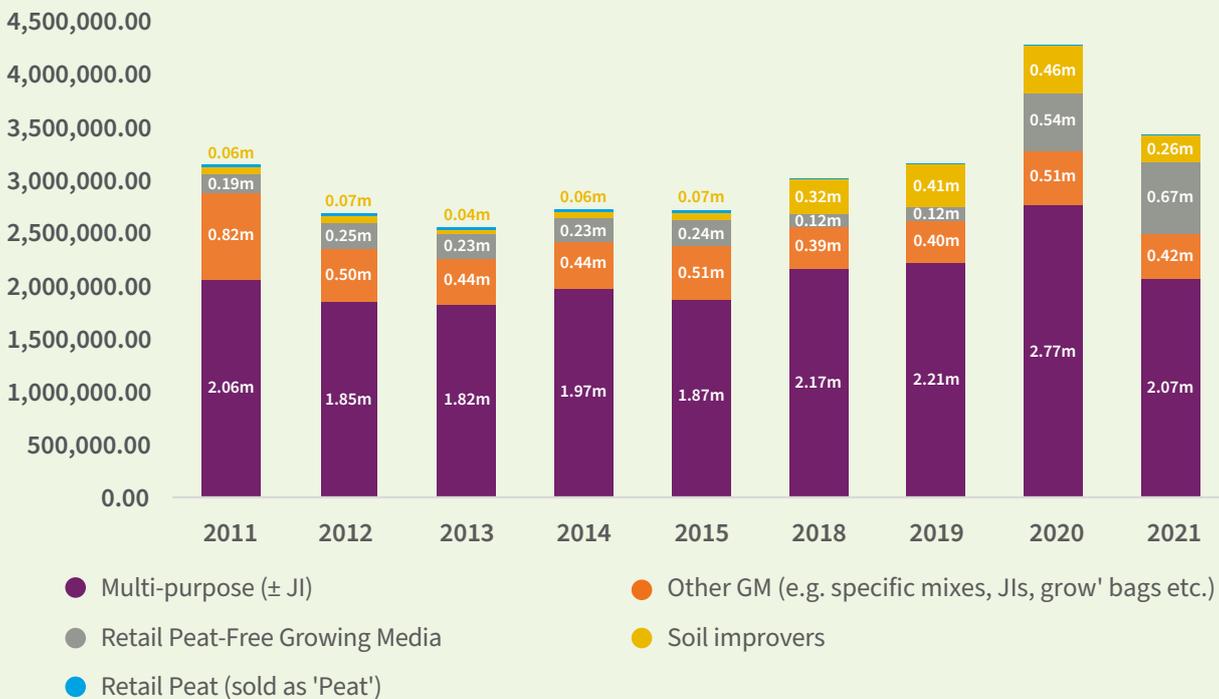


Chart 3: Overall volume (cubic metres) of growing media for the UK retail sector 2011-2021

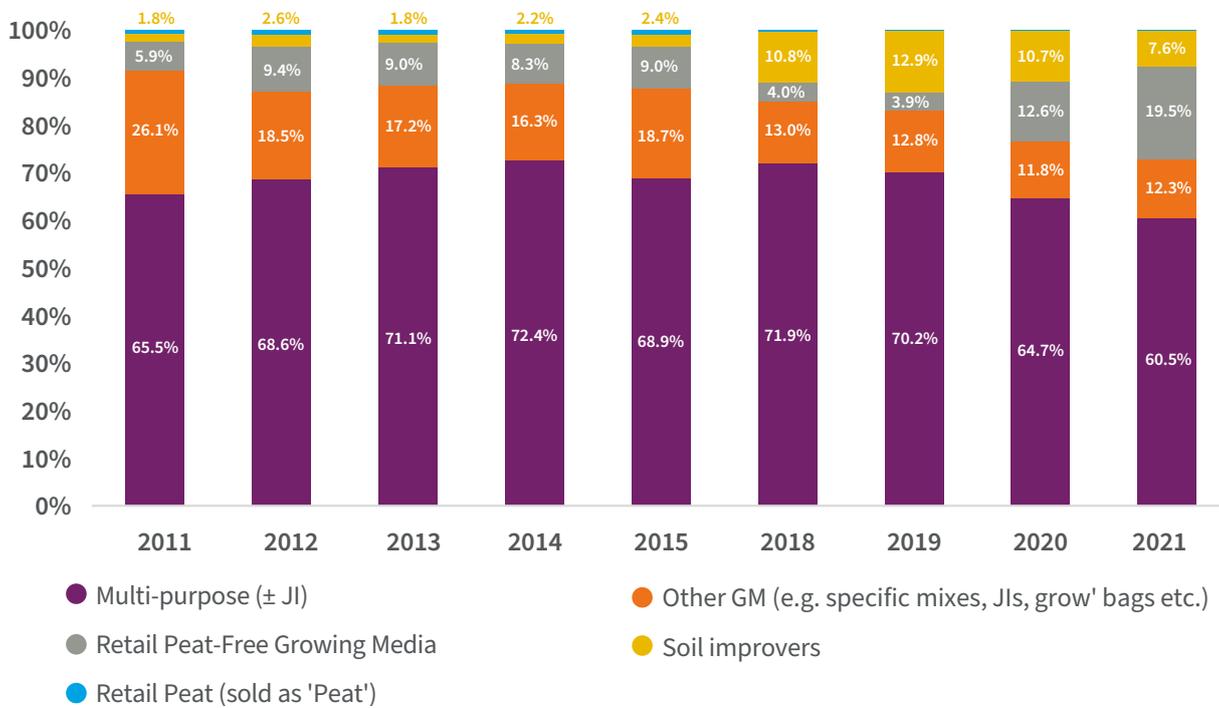


Chart 4: Overall volume (%) of growing media for the UK retail sector 2011-2021

The 2021 data for the first time allows us to see more detail of the types of peat-free product being sold. In peat-based growing media products, multi-purpose composts account for 83% of the volume of product supplied, with the other 17% accounted for by specialist products such as John Innes, grow bags, or mixes specifically for plants such as ericaceous plants, citrus, cacti, and so forth. In peat-free growing media products, multi-purpose composts account for 87% of the volume, showing that multi-purpose product is the dominant category in both peat-based and peat-free categories. However whilst this difference is slight, it also reflects some of the technical challenges manufacturers face in developing reliably performing mixes for specific types of plants and gardening purposes, for instance specialist product for ericaceous plants.

Overall, in retail, there has been a very significant acceleration in the removal of peat between 2020 and 2021. In absolute terms peat use fell by around 33% between 2020 and 2021. In 2021, where consumer demand returned to nearer normal levels, 0.57m cubic metres more of peat alternatives were used compared with 2019. From these data we conclude that significant progress has been made in retailers' specifying and requesting peat-free and peat-reduced product, and in manufacturers' ability to bring peat-free formulations to market. Accelerated progress to further reduction and removal of peat from amateur retail is likely to rely on availability of sufficient peat-alternatives, and manufacturer capacity to process these raw materials into sufficient product supply to meet buoyant demand.

Professional sector findings

In the professional sector the volume of growing media supplied increased in 2021 compared with 2020. This apparent contrast with the retail sector reflects the fact that UK horticultural production was locked-down from late March to late May in 2020, with the most significant route to market – garden centres – closed until mid-May; increased consumer demand for garden plants in this period was to a substantial extent met through imports. In the professional sector use of growing media was up 9% on 2019, reflecting an underlying growth in consumer participation in gardening.

For the first time in nearly a decade, the proportion of volume accounted for by peat fell materially from 62.3% in 2020 to 51.7% in 2021; actual volume supplied fell from 0.72m cubic metres to 0.63m cubic metres (charts 6 & 7). The ‘gap’ has been filled by coir and wood-based materials, which now account for 25.7% and 17.9% of volume respectively. Indeed, these three materials now account for over 95% of volume, with most of the rest being accounted for by bark.

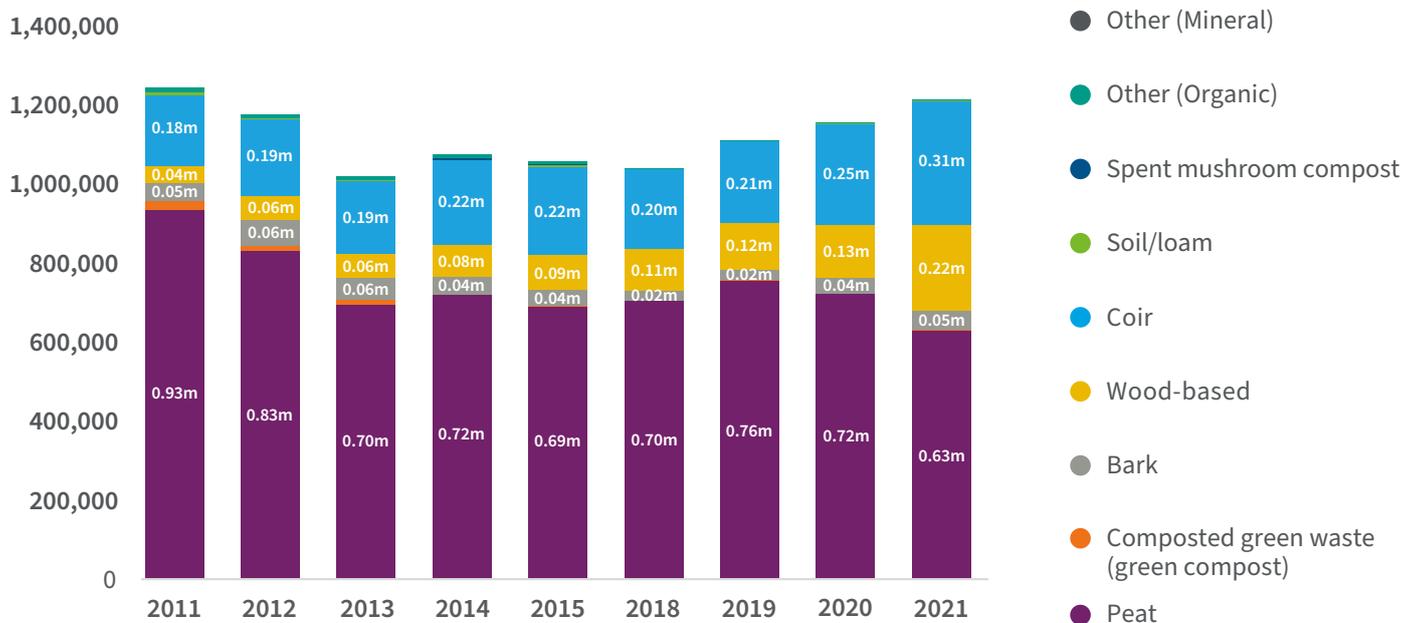


Chart 6: Volume (cubic metres) of professional growing media supplied by component parts

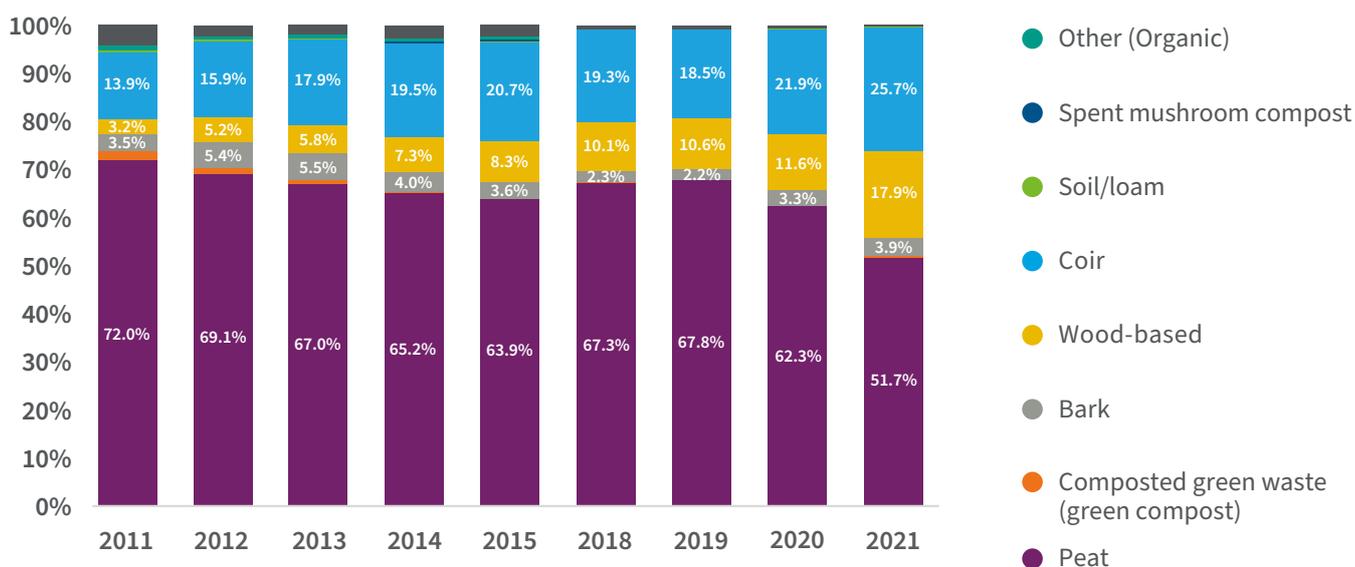


Chart 7: Proportion of professional growing media volume accounted for by different component

Whilst these data show trends in the volume of components used in the professional sector on a like-for-like basis in terms of the manufacturer businesses submitting data (see annex 2 for details on sample and methodology), further survey work among UK growers conducted by the Growing Media Task Force identified an additional 0.143m cubic metres of peat being used in mushroom production. This data is not included in charts 6 and 7 (not in charts in the main body of this report) in order to be able to show historical trends. However more detailed discussion of this volume is provided in annex three of this report which provides the results of this survey and discusses its implications for the reduction of peat use in professional horticulture.

In terms of trends in product types within the professional sector, peat-free professional growing media has increased both its volume and the proportion of total volume it accounts for. In 2020 professional peat-free accounted for 21.3% and in 2021 this increased to 25.9%. For the first time, the data collected in 2021 allows us to review the types of growing media product that peat-free accounts for. Of the 0.31m cubic metres of professional peat-free product (chart 8), 82% of it (0.26m cubic metres) is growing systems such as growing bags, slabs and troughs; 99% of this volume for this type of product is made up of coir.

A total of 0.056m cubic metres of professional peat-free product is used for products and purposes other than growing systems such as growing bags, troughs and slabs; this is likely to include the production of hardy nursery, bedding and pot plants. In the absence of historical data, it is impossible to tell

whether professional peat-free growing media is increasing substantially in volume over time. However comparing this 0.056m cubic metres of professional peat-free product with the 0.677m cubic metres of peat-based growing media used in the professional sector to produce nursery stock, pot or bedding plants suggests that roughly 5-10% of the growing media used to produce UK bedding and nursery stock crops was peat-free product in 2021. Of the 0.677m cubic metres of peat-based growing media used to produce nursery stock and bedding plant crops, 68% of this (0.462m cubic metres) is made up of peat.

These data lead us to conclude that there are some foundations among UK ornamental growers on which to build in terms of transitioning to production of finished ornamental plants for supply into the retail and amenity markets. However, the knowledge of how to produce these finished ornamental crops reliably at scale is highly likely to be in its infancy and will require substantial knowledge transfer and trialling among UK growers. We also note for the purposes of transparency that these data relate only to supply of growing media UK producers of plants; peat used by overseas growers who export plants to the UK are not captured in this data. It will be important in moving towards the removal of peat from horticulture in the UK that this is taken into account in future. A scenario in which reductions in peat use by UK growers are offset by increased imports of plants produced in peat at lower cost and/or higher yield from overseas growers would effectively be offshoring the UK's peat use.



Chart 8: Volume supplied (cubic metres) of different professional growing media products

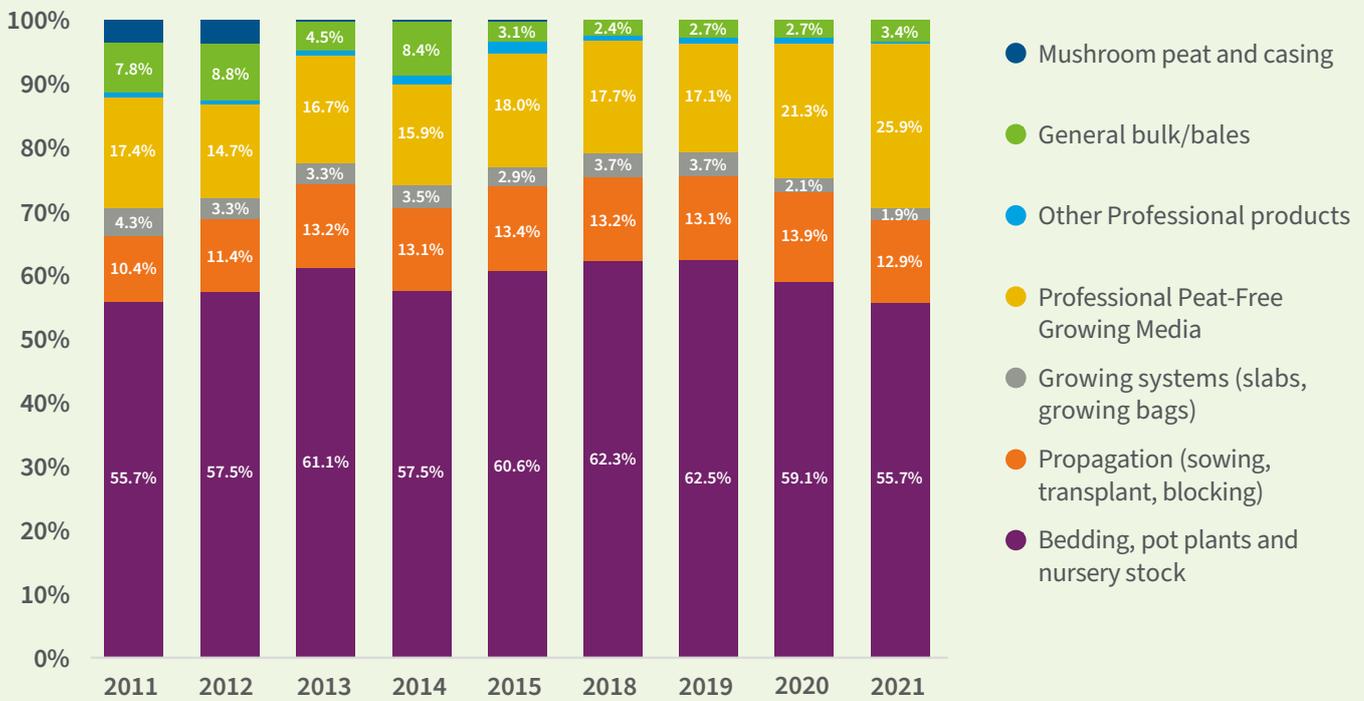


Chart 9: Proportion of total volume of professional growing media accounted for by different products



The origin of peat in the UK's Growing Media



Peat extracted for use in the UK has, historically, been sourced in part from the UK and in part from overseas, notably the Republic of Ireland. Indeed, at the start of this study in 2011 50% of the peat used in UK growing media was sourced from the Republic of Ireland. Regulatory change in the Republic severely limiting the extraction of peat has begun to show an effect on the 2021 data. In 2020 1.17m cubic metres of peat was sourced from the Republic of Ireland, and in 2021 this had fallen by around 400,000 cubic metres. It is highly likely that almost all of the peat supplied in 2021 from the Republic had been extracted before the restrictions on peat extraction came into force.

We conclude from this data, that growing media manufacturers supplying the UK market are likely to face growing challenges in sourcing peat alternatives to substitute this volume. In 2021 what increase in peat sourcing there was came from other EU sources, most likely Baltic nations. The geographically lengthier supply chains for this raw material to the UK market combined with increasing fuel and transport costs are likely to negate the cost differential that historically made peat a cheaper ingredient to use than alternatives. Whilst in once sense this development is likely to make continuing

peat use uneconomic, it also carries significant risks for growing media manufacturers supplying the UK market. Without adequate access to alternative materials and the infrastructure to be able to process them in sufficient volume, there is a risk on shortages of supply to the market and/or of substantial price inflation on growing media supplied to the retail and professional sectors in the coming years.

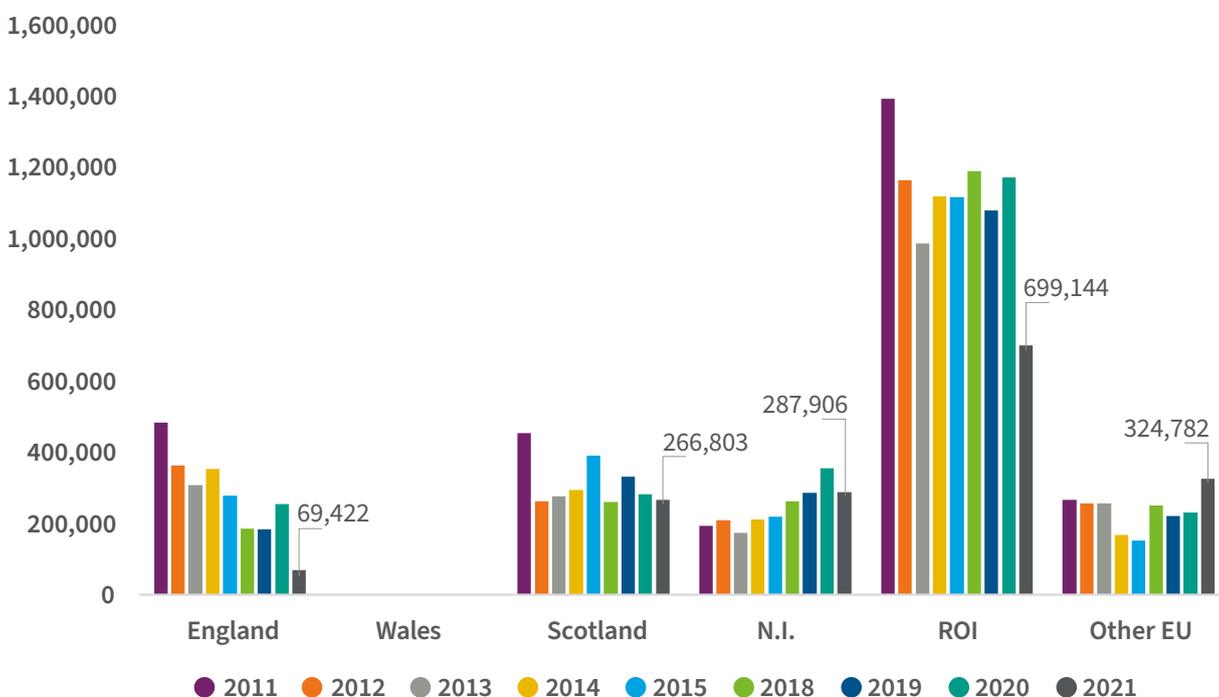


Chart 10: Volume (cubic metres) of peat used in growing media supplied to the UK by country of origin

Overall peat use in growing media

Looking at the combined retail, professional and export supply of growing media and peat, 2021 has seen a significant downward movement. Chart 11 shows both the total volume of peat supplied, and the proportion of total growing media

supply that this accounts for. After a blip in the volume of supply in 2020 reflecting the pandemic gardening boom, the volume of supply has resumed its downward trajectory along with the proportion of the total accounted for by peat.

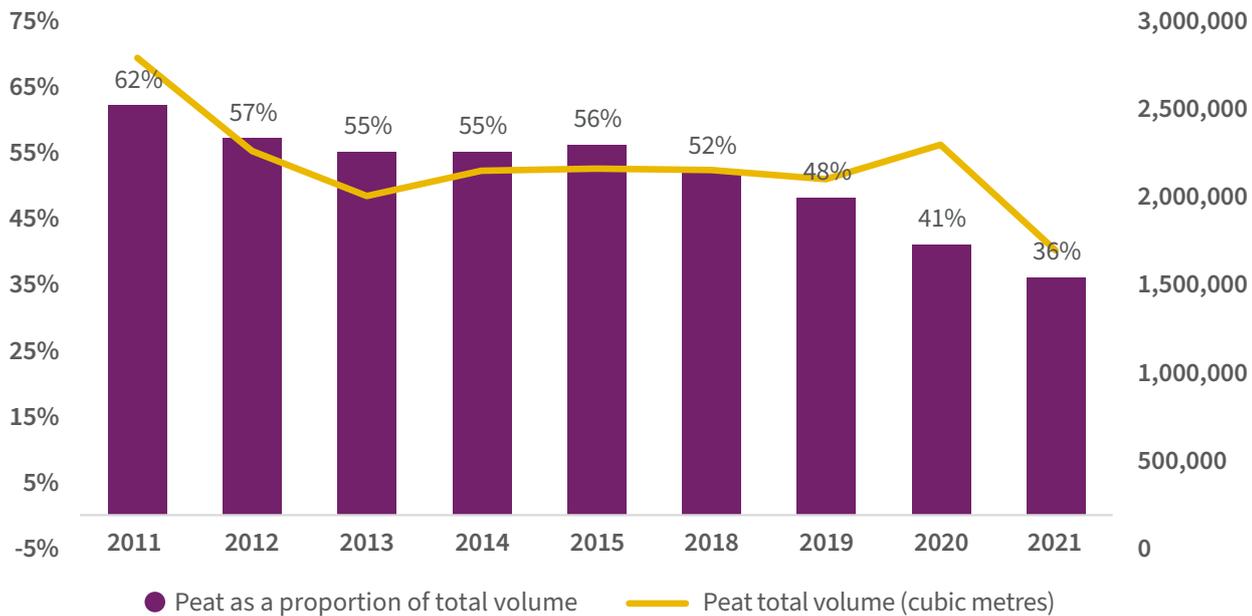


Chart 11: Proportion of total growing media (all sectors) volume accounted for by peat

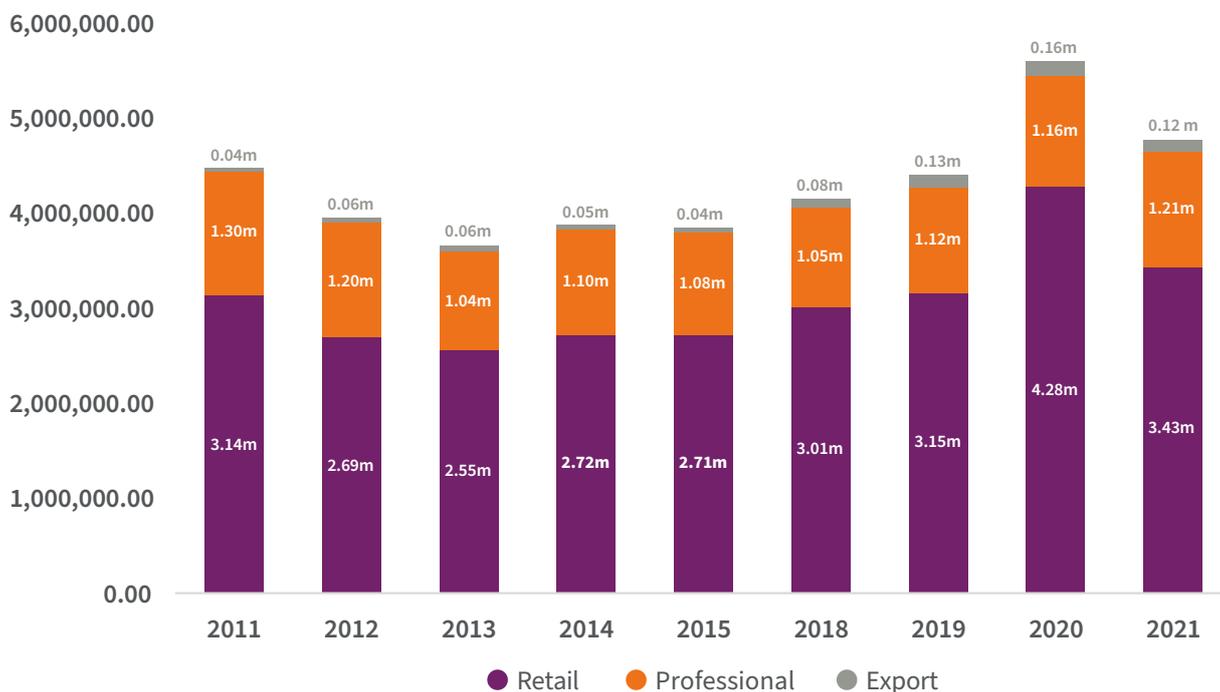


Chart 13: Split in volume (cubic metres) of growing media by sector

As in previous years, the bulk of the volume of growing media supplied to the UK market is in the retail sector. We would conclude from the data in 2021 that peat removal in the retail sector is on a downward trajectory that is likely to accelerate given the demand among retailers for peat-free product and the increasing costs and difficulties of

sourcing peat economically from within the UK and Ireland. In the professional sector there is now evidence emerging of movement away from peat in crop production, and we would conclude that this too is likely to accelerate as retailers increasingly adopt sourcing and buying policies that require peat-free production.



Discussion

2021 saw volumes of growing media supply to the amateur sector fall materially after the spike in gardening during the Covid-19 lockdown of 2020. Indeed, such were the difficulties retailers faced in obtaining sufficient supplies of growing media to meet demand, that there was some stock-piling by retailers at the end of 2020 in order to meet heightened consumer demand. It is worth noting that even though supply to retail fell on 2020, overall volumes compared with 2019 are up by 9%. As we might expect in such a context, peat volumes in growing media supplied to the amateur market fell substantially, by over half a million cubic metres; this is a third of the volume of peat that was supplied to retail in 2020. The proportion of peat in amateur growing media has continued to fall, to 29.8% in 2021 from 35.5% in 2020.

As noted, for the first time peat is not the most voluminous component of amateur growing media, with wood-based materials such as wood fibres accounting for 30% of volume. In real terms however, the supply of wood-based materials only increased modestly from around 1.09m cubic metres in 2020 to 1.29m cubic metres in 2021. This reflects the challenges in sourcing wood-chip due to competing demand

for the material in construction (for fibre-board manufacturer) and for production of wood-pellets for biomass power stations. The Renewable Energy Obligations fiscal incentives to encourage energy companies to transition towards renewable energy sources are likely to continue to incentivise the use of wood-based fuel in energy production, keeping costs high and limiting the availability of materials for horticulture unless other sources can be unlocked. Indeed, data from the HTA's Garden Retail Monitor of garden centre sales showed that the average unit price for growing media product increased by 7% in 2021 compared with 2020¹, reflecting the increased costs of peat-replacements and of transport in the supply chain.

The proportion of volume comprised of 'other' materials (mainly novel materials which are not disclosed due to commercial sensitivity) is now 12% compared with 10% in 2020. Coir volumes and percentages fell substantially (by 0.12m cubic metres) in 2021 compared with 2020, reflecting the serious impact of Covid-19 in India and Sri-Lanka on coconut production and port operations during 2020 for supply to the UK horticulture market in 2021. This latter-point brings into sharp relief the challenges of availability of different

¹ Based on complete data sets for 40 UK garden centres. Data is based on the total value of growing media sales divided by the units sold. No data is available in the data on changes to the average volume of each unit (e.g. downsizing of bags) and so there is some margin for error in this 7% as a measure of price inflation.

components in growing media as peat – a historically abundant and locally available resource – is removed from horticulture.

Peat-free products have substantially increased their market share compared with 2020. In 2021 peat-free product (e.g. bags containing no peat) accounted for 20% of volume supplied, compared with 13% in 2020. This reflects retailer demand for peat-free product in the supply chain, with major retailers with sufficient buying power to drive change in manufacture now laying out peat-free buying policies. Whilst this is clearly a powerful driver of change and suggests likely further future movement away from peat, should alternatives not be available the risk is that smaller retailers without such buying power will not be able to access peat-free products, or that the proportion of peat used in peat-based products will increase in order to satisfy the demands of the major retailers. So far this appears not to be the case; the peat content of peat-based multi-purpose composts fell from 44% to 40% between 2020 and 2021. However, access to alternatives to continue this momentum is now the critical success factor in the industry being able to remove peat from supply to retail whilst still satisfying buoyant consumer demand for gardening.

In the data for the professional sector two trends are noticeable; an increase in growing media volume and a marked reduction in peat between 2020 and 2021. The volume of growing media supplied to the professional sector in 2021 compared with 2020 increased from 1,158,000 cubic metres to 1,214,000 cubic metres. At face value this would seem to be at odds with a spike in consumer demand for gardening in 2020 that fell away slightly as the country ‘unlocked’ in 2021; if consumer demand for gardening spiked in 2020. However, the 2020 lockdown initially saw UK production nurseries forced to halt crop production as the work-from-home guidance took effect in March to May – a peak production season. Much of the spike in demand for garden plants was supplied from plants produced in the Netherlands where continued horticultural production was allowed and received government support. Compared with 2019, professional volumes of growing media use are 9% up, reflecting both the sustained consumer demand for gardening and increasing production of plants and trees for amenity supply in urban greening and climate change mitigation projects.

In terms of peat use, the proportion of peat fell from 62% in 2020 to 52% in 2021. Volumes fell from 0.72m cubic metres to 0.63m cubic metres. In 2020 peat-free professional product accounted for 21.3% of volume supplied to the professional sector, and in 2021 this had increased to 25.9% on a like-for-like basis. However, and as discussed earlier in this report, in 2021 for the first time a ‘product breakdown’ of professional peat-free product was collected. This shows that the bulk of peat-free product (82%) is made up of growing systems such as growing bags, slabs and troughs. Comparatively little peat-free product (56,500 cubic metres) is used in the production of finished ornamental crops such as bedding, pot plants and nursery stock. We can infer (but not definitively prove) from this that between 5% and 10% of commercial production of these crops was done using peat-free product (assuming broadly similar yields between peat-based and

peat-free products) in the 2021 growing season. We should note that the time frames for our data gathering and reporting cycle potentially misrepresent the current ‘state of play’ in professional horticulture. Ornamental crop production (and growing media consumption) mostly occurs early in the year as crops are produced for the peat retail season (March to June). The 5-10% range estimate therefore is likely to describe the ‘situation on the ground’ in early 2021, which was itself planned out in mid-to-late 2020. Planning currently (summer 2022) underway for the 2023 production season is likely ahead of the 5-10% range estimate in this report. Within the peat-based growing media used for producing bedding, pot plant and nursery stock crops, the proportion of peat used fell in 2021 to 68% from 77% in 2020, showing serious intent from UK ornamentals growers to move away from peat.

These are the first material and sustained falls in the use of peat for professional crop production in over ten years. The changes reflect emerging grower confidence in working with peat-free and peat-reduced growing media at commercial scale, and a response to the aspirations to remove peat from the supply chain of major retailers with sufficient buying power and scale to drive change in the supply chain. The fact that some growers are now clearly producing crops in peat-free product suggests an opportunity to support further transition to peat-free production through knowledge transfer and further trials within professional production of different crops. As the 2020 data shows, there is a risk that increasing UK demand will be met by imported plants if and where UK growers cannot meet demand. If these imported plants are produced in peat-based growing media (Europe is significantly behind the UK in removing peat from the horticultural production), then the unintended consequence would be to ‘offshore’ or even increase carbon emissions from plant production to supply UK demand.

Appendix 1 - Approach to sampling

Businesses to be approached were identified by the GMA in 2011 as being likely to account for a substantial proportion of materials supplied to the UK growing media market. This included businesses inside the GMA and those outside it. This list is reviewed regularly, with businesses approached to take part on a voluntary basis. Data is provided to PWC on a commercial and in-confidence basis. Other members of the GMA and the HTA do not have access to participating businesses' individual data. Overall, the bulk of volume supplied is to retail markets, with most of the rest accounted for by the professional market. The proportion supplied for export has remained negligible over the nine-year life of the study.

In the 2018, 2019, 2020 and 2021 waves of the study data was provided by the companies listed in the table on below. Somerset peat producers, as in previous years, provided a

narrative report to PWC in 2020 indicating that their use of components had not changed substantially since 2015 and that re-using this data would provide an accurate view of their current position. In 2021 no data was able to be obtained from smaller Somerset (and some smaller Northern Ireland producers) via GMA contacts, and so their 2020 was used in place of fresh data as a best estimate way of getting as comprehensive as possible a view of peat use.

As noted earlier in this report, the data is provided by manufacturers and taken in good faith. Although checks on the validity and any exceptions are performed in the course of producing this report, neither PWC nor the HTA is in a position to audit, inspect nor verify the actual components of shipped product against the returns provided for this report.

Supplier/Brand	2011-2015 Cohort Data	2018 & 2019 Cohort Data	2020 & 2021 Cohort Data
Bord na Mona (= Greener Gardening)	Yes	Yes	Yes
Bulrush Horticulture Ltd.	Yes	Yes	Yes
Durstons	Yes	Yes	Yes
Erin Horticulture	Yes	Yes	Yes
Evergreen Garden Care	Yes	Yes	Yes
EJ Godwin	Yes	Yes	Yes
Horticulture Coir Ltd.	Yes	Yes	Yes
ICL (was Everris Ltd)	Yes	Yes	Yes
Jiffy Products UK	Yes	Yes	Yes
Klasmann-Deilmann Ireland Ltd.	Yes	Yes	Yes
Melcourt Industries Ltd	Yes	Yes	Yes
Roffey Ltd.	Yes	Yes	Yes
Smaller Somerset Producers	Yes	Yes	Yes
Tref B.V.	Yes	Yes	Yes
Westland Horticulture	Yes	Yes	Yes
White Moss Horticulture	Yes	Yes	Yes
William Sinclair Horticulture	Yes	Yes	Yes
Botanicor	Yes	Yes	Yes
BVB Substrates	Yes	No	No
Kekkila (Vapo Oy)	Yes	No	No
Clover Peat	Yes	Yes	Yes
Dutch Plantin	Yes	Yes	Yes
Legro	Yes	No	No
Petersfield Growing Mediums	Yes	No	No
Premium Horticulture	Yes	Yes	Yes
Vital Earth	Yes	No	No
Evergreen Peat	No	Yes	Yes
Southern Trident	No	No	Yes
Veolia Pro-Grow	No	No	No

Appendix 2 - peat extraction in the UK

Background

Defra requested that the HTA assess the current extent of peat extraction for horticulture in the UK to provide an updated input into the UK's national carbon accounts. The most recent previous data is from the Department of Communities and Local Government's mineral extraction survey in 2014, and which therefore provides an out-of-date view of peat extraction in Great Britain of 763k cubic metres in 2014.

To address this the HTA ran a pilot survey in late 2020 and early 2021 of GMA members asking for the hectareage from which peat was extracted in the UK in 2019, and the volume extracted (as opposed to the Mineral Extraction survey which only covered GB). Respondents were provided with the option to provide an average for 2017 to 2019 in terms of volumes to maintain commercial confidence. From this data HTA summed the returns to get to an estimate of UK hectareage and volume around the year 2019.

Extraction volumes will not exactly match use and sales data in this report due to fluctuations in storing and moving volumes of raw materials through the supply chain. Survey returns were received from all the main peat producers in the GMA known to extract from UK sites. Returns were received from Godwins, Durston's, Bulrush, Westland, Evergreen, and ICL. In UK peat extraction there is a 'long thin tail' of small companies outside of the GMA which extract peat from who did not provide data for this exercise.

To further validate the work on areas of extraction, The Growing Media Association conducted a review of the known sites from which peat is (in 2020) currently extracted. This will not exactly match with the survey data on extraction, as not all sites available for extraction will necessarily be used in any given year and the sampling approach is different. However the range should provide a robust assessment of peat extraction for horticulture that can be developed in future years.

Findings

The survey of GMA manufacturers recorded 811 hectares in the UK used in 2019 for peat extraction, although this excludes hectareage used by small, non-GMA members. This compares with the site by site review of hectareage from the GMA which found a maximum of 1,540 hectares of sites with the licensed potential to be used for extraction in the UK. Taking a mid-point between these areas would give 1,175 hectares, which would mitigate for any possible under-reporting due to sampling in the survey and any sites that have the potential to be extracted not being used in a given year.

In terms of volume, the survey returns totalled 588,324 cubic metres of peat extracted from UK sites in 2019. A caveat on this estimate is that two responding businesses reported a total across 2017 and 2019. In calculating the 588,324 estimate, these two returns were divided by three to arrive at an approximate annual figure. As noted, the data does not capture extraction from non-GMA businesses. The survey estimate compares with reported use of peat sourced from the UK in 2019 of 799,167 cubic metres (chart 10).

The variance between sales and extraction is likely due to a range of factors, first of which is the exclusion of smaller extractors from the sample. Secondly, the two returns which provided a total for 2017-2019 will introduce potential for error. Thirdly, as peat decreases in the mix of growing media, there is less commercial reason to retaining large reserves of peat as a raw material. If peat manufacturers were reducing reserves in line with a transition away from peat, we might expect extraction to fall short of sales. The conclusion we would draw from the available data is that in 2019 peat extraction from UK sites ranged from a likely minimum of 600,000 cubic metres to a likely maximum of 800,000 cubic metres, and has likely fallen compared with the 2014 Mineral extraction survey for Great Britain (noting that this survey excluded Northern Ireland).

Appendix 3 – summary findings of a survey by the Growing Media Task Force of UK professional horticultural growers on their use of peat

Between 2012 and 2020 the proportion of volume accounted for by peat fluctuated between 69% and 63%; the fall in 2021 to 51.7% was the first substantial fall in this sector in a decade (chart 7). However, in terms of absolute volumes of peat used falls since 2013 are only marginal. Further, there is a risk in the method employed insofar as if a supplier of peat (or any component) is omitted from the sample, an incomplete picture may result. Appendix 1 shows that some suppliers to the market have declined to provide data to this study since 2015. An example of the consequence of this is that a zero value was returned for peat used in mushroom casing in 2019 and 2020, which is inconsistent with known peat use by UK mushroom producers. The same risk applies to any ingredient of professional growing media.

To address this, for this report the HTA, in collaboration with the Growing Media Task Force, conducted a survey of UK ornamental and edible grower businesses. These growers were invited to take part in an online survey about their peat use in 2021. Ornamentals growers were sampled via an email invitation to HTA's database of ornamentals growers. Edibles growers were sampled via an email invitation and online link on the NFU's web site. This appendix summarises the results of this survey, discusses these results in the context of the data reported by growing media manufacturers, and makes conclusions and observations relating to peat removal in the professional sector.

Key findings: UK production of finished ornamental crops

The survey captured 79 full responses from ornamental growers with a combined turnover of £231m which reported peat use of 69.8k cubic metres of peat in 2021. However, within this one major producer of plug plants distorted the representativeness of the sample. After correcting for this the combined turnover of growers and producers in the sample was £200m. We estimate that this accounts for 13.8% of the ornamental output value in 2021. This estimate is based on using Defra's data on 2020 ornamentals output value of £1.358b and allowing for the sector to have grown to £1.450b in 2021 (UK production was halted for c. six weeks months by the Covid-19 Lockdown).

Using this 13.8% as a multiplier to extrapolate the sample's reported use of 69.8k cubic metres of peat to the population of growers as a whole provides an estimated 505k cubic metres of peat used by UK growers to produce finished ornamental plants and bulbs. Respondents report that peat accounts

for 56% of the total growing media volume used. The data from returns by growing media manufacturers shows that the proportion of growing media reported by growing media manufacturers that was supplied for use in bedding, tree and shrub, and hardy nursery stock production was 66% of total growing media volume. Data from manufacturers shows peat volumes of 462k cubic metres supplied in growing media for these crops. Allowing for sampling error and differences in methodologies, the estimates from manufacturers and growers are reassuringly similar. As such, is reasonable to conclude that 450k-500k cubic metres of peat is used in UK production of finished ornamental crops and bulbs, and that this peat accounts for around 60% of growing media used in the production of finished ornamental crops.

Further work was conducted to estimate the volumes of peat used to produce specific ornamental crops identified by commercial growers as being technically difficult to produce without peat. These crops were in the main acid-loving ericaceous crops, carnivorous plants, and bulbs. The data provided by growers in the survey estimates peat use in 2021 in the production of these finished crops to be around 41,000 cubic metres; this equates to between 5% and 10% of the peat currently being used in the production of finished ornamental plants and bulbs.



	Sample size	Estimated peat volume (m ³)	Mean peat %	Median peat %
Acid loving shrubs	26	9,000	53%	70%
Acid loving trees	19	4,400	39%	40%
Ericaceous grasses and sedges	21	3,400	50%	60%
Heathers	10	2,400	60%	70%
Carnivorous	2	60	75%	75%
Ground cover	11	1,700	54%	70%
Bulbs	Data for bulbs is unclear as the question asked about annual use. In bulb forcing peat is re-used for several years and so annual use is not a good measure. The sales value of bulbs reported is also higher than for most crops as a percentage of total value meaning estimates are likely to be unreliable. We have assumed a three-year replacement cycle for peat use in the bulbs sector to get to an approximate figure of 20,000 cubic metres per year			
Total peat used in specialist crops with technical barriers to peat removal	N/A	41,000	N/A	N/A

Table 1: Estimated volumes of peat used in the production of finished ornamental crops²

Key findings: peat use in plant propagation, seed sowing and plug plant production

Across edible and ornamental horticulture production, the very early stages of plant production rely on peat. Plants in their earliest stages of life are produced at commercial scale in small ‘cells’ which can be the size of a thumb-tip. They are typically transplanted into larger containers as the plants grow for further growing-on by UK growers and producers of finished plants. Because a plant at this early stage of its life essentially consists of a very small root and shoot, it is essential that the very small volume of growing media in a cell binds to the root during transplantation of the plant from one container to another; the physical properties of peat mean that peat performs very well in this respect. Because of this, much of the automated machinery and skills for transplanting have evolved around the physical properties of peat. Where the growing media fails to bind to the root, it becomes impossible to automate the transplanting process using the current machinery in place, leading either to crop failure or substantial increases in manual labour and decreased productivity. Should such plant death occur at scale, the knock-on impact on the availability of young plants further along the supply chain would be serious, ultimately affecting the supply of plants and trees to gardeners and amenity customers. This issue also affects edible crops such as salads, herbs and brassicas.

Given the very small capacity of the cells and containers used at this stage of the plant production process, it was hypothesised that the volume of peat used is likely to be small relative to overall use of peat in horticulture, but that its removal without an adequately performing alternative has the potential to cause disproportionate (and potentially devastating) damage the whole edible and ornamental supply chain.

Data supplied by growing media manufacturers for 2021 shows that 124k cubic metres of peat was supplied for use in propagation (sowing, transplant, blocking) and for growing systems. The survey of growers obtained no responses from businesses engaged specifically with seed sowing, plug and young plant production and propagation for edible horticulture. However, from the grower survey we are able to estimate that around 29k cubic metres of peat (23% of the total peat used for this purpose) was for ornamentals; we assume that the remainder is used in the edibles supply chain.

Key findings: peat use in the production of finished edible crops

As noted, in previous reports there was a lack of data on the volume of peat used in the production of specific edible crops where peat use is known to be high, specifically in mushroom and blueberry production as well as in the early stages of production of salad, herbs and brassica transplants.

In mushroom production, responses to the survey were received from five mushroom producers who collectively account for 11% of the UK’s mushroom output by tonnage. These businesses reported total peat use of 15.1k cubic metres in 2021. On the assumption that these businesses are representative of mushroom production as a whole, this generates an estimate of approximately 143k cubic metres of peat used in mushroom production. Indeed, there was little variation between the five businesses responding in terms of the ratio of peat volume to crop yield in tonnes (chart 14).

² The data in the table show estimates of total peat use across ornamental production of different crops, and the proportion of growing media used for producing the crop which is accounted for by peat. Total volumes are calculated on the basis of taking the cubic metres reported by businesses responding to the survey and assuming that they account for 13.8% of total production and growing media usage (in line with the proportion of total UK ornamental production value the survey has captured). Based on total peat use in producing finished plants, cut flowers and bulbs this 41,000 cubic metre volume would equate to around 10% of total peat use in producing these ornamental crops.

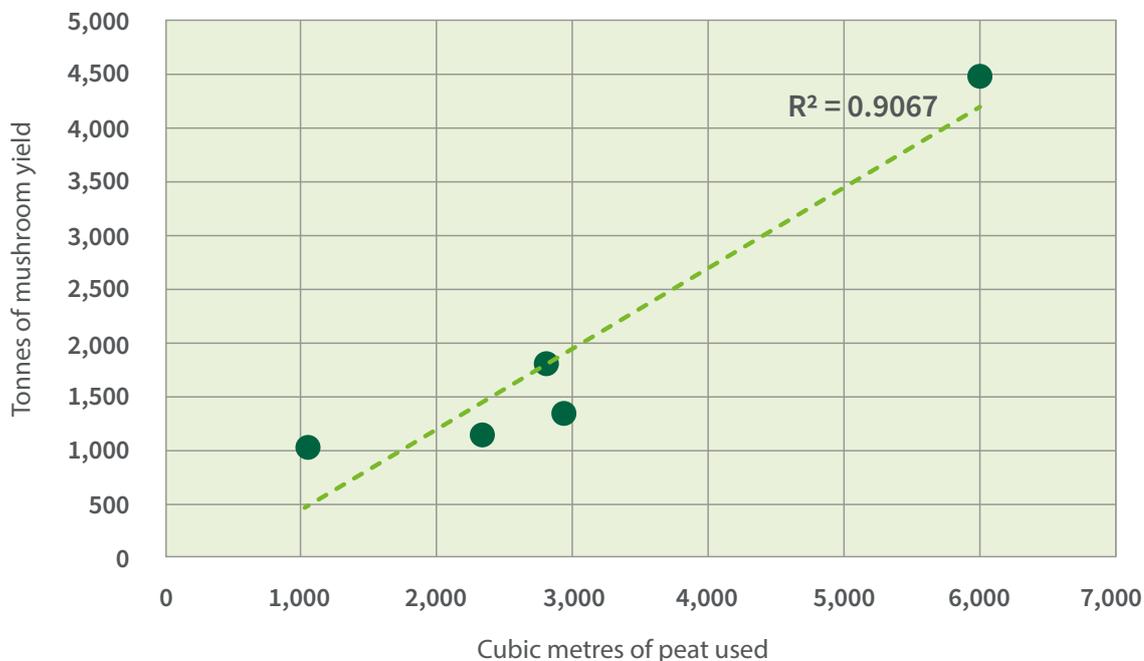


Chart 14: Mushroom growers' use of peat relative to crop yield in tonnes

We conclude from this that, as yet, the knowledge of how to reduce peat further without compromising mushroom crop yield does not exist. It is important to note that this volume of peat use has not been captured in prior reporting on peat use in the professional sector (e.g. in returns provided by growing media manufacturers). Through responses from mushroom producers we identified that specialist and overseas suppliers of the particular type of peat used as a casing layer in mushroom production are a key source of supply. We recommend that these suppliers be invited to submit data in future years of this study to ensure as comprehensive as possible a view of peat use in professional horticulture is maintained.

Moving from mushrooms to blueberries, we use reporting of British Summer Fruits' estimates of UK Blueberry production and have allowed for an expansion in output of UK blueberry production to 5,000 tonnes per year. No responses to the survey were received from blueberry producers, and so instead, we estimated peat use in blueberry production on the following basis. Based on conversations with two sources with expertise in blueberry production we estimate that:

- A blueberry bush is typically potted in a 30-litre pot
- Each pot yields 1.5kg of fruit per annum
- 3.33 million pots would therefore be required for 5k tonnes of yield
- Peat is 40% of the substrate volume per pot
- Once potted, the blueberry plant lasts for ten years before it is replaced, and newly extracted peat is then required for a new plant to replace it
- On this basis we estimate that around 4k cubic metres of peat is or could be used in UK production of blueberries.

Overview and concluding remarks

Based on our analysis of the survey of UK growers and comparison of this data with that produced from growing media manufacturers' returns, we conclude that:

1. The volume of peat used in professional UK horticulture is around 771k cubic metres. This is based on the 628k cubic metres reported by UK growing media manufacturers (which on a like-for-like basis has fallen since 2020) plus 143k cubic metres estimated to be used in mushroom production
2. The volume of peat used in crops and forms identified as technically difficult to produce in peat-free growing media are:
 - Mushrooms – 143k cubic metres
 - Plug plant production, seed sowing and propagation – 124k cubic metres
 - Production of finished ornamental crops – 41k cubic metres
 - Blueberry production – 5k cubic metres
3. 40% of the peat used in professional horticulture is used in the production of crops with major technical barriers to removing peat, and for which a case could be made for research and development and temporary exemptions from peat removal targets.
4. In the professional production of finished ornamental plants, around 5% to 10% of the peat used is on crops such as ericaceous plants where a case could be made for research and development and temporary exemptions from peat removal targets in order to safeguard supply of these crops to the UK market and the specialised businesses which rely substantially on these crops for their commercial viability.

