CIÊNCIAS AGRÁRIAS, ALIMENTARES E VETERINÁRIAS
AGRICULTURAL SCIENCES, FOOD AND VETERINARY
CIENCIAS AGRÍCOLAS, ALIMENTOS Y VETERINARIA

millenium

Millenium, 2(30)

en

UMA ANÁLISE DA UTILIZAÇÃO DA TURFA COMO SUBSTRATO HORTÍCOLA NO REINO UNIDO E IRLANDA
AN ANALYSIS OF THE USE OF PEAT AS A HORTICULTURAL SUBSTRATE IN THE UK AND IRELAND
UNA ANÁLISIS DEL USO DE LA TURBA COMO SUSTRATO HORTÍCOLA EN EL REINO UNIDO E IRLANDA

Felisberta Cunha [1] *https://orcid.org/0009-0009-3562-9793*

[1] College of Agriculture, Food and Rural Enterprise, Northern Ireland, United Kingdom

Feslisberta Cunha - felisbertac@yahoo.co.uk

Corresponding Author
Felisberta Cunha
Mount Merrion Park
BT6 - 0GA – Belfast– United Kingdom
felizbertac@yahoo.co.uk

RECEIVED: 16th April, 2026
REVIEWED: 17th April, 2026
ACCEPTED: 11th June, 2026
PUBLISHED: 25th June, 2026

DOI: https://doi.org/10.29352/mill0230.46650

RESUMO

Introdução: A indústria hortícola tem dependido, ao longo de gerações, da utilização da turfa como componente fundamental dos substratos para o cultivo de plantas. Este artigo analisa a sua utilização no Reino Unido e na Irlanda, no contexto das propostas governamentais para o fim da extração de turfa nestas regiões.
Objetivo: Analisar a utilização da turfa como substrato de cultivo hortícola no Reino Unido e na Irlanda.
Desenvolvimento: A indústria hortícola tem dependido da turfa como um componente essencial da maioria dos substratos de cultivo profissionais durante muitos anos. No entanto, evidência dos danos ambientais causados pela extração a partir de habitats naturais tem conduzido a uma pressão crescente sobre os governos do Reino Unido e da Irlanda para implementar medidas com vista à eliminação progressiva da sua utilização. Para responder a esta situação, os diferentes intervenientes desta indústria envidaram esforços significativos no desenvolvimento de substratos que incorporem componentes alternativos mais sustentáveis; contudo, os resultados obtidos têm sido apenas parcialmente bem-sucedidos. Alguns subsectores da horticultura poderão necessitar de apoio adicional para realizar esta transição num período mais alargado, de forma a evitar impactos negativos caso seja aplicada, no curto prazo, uma proibição total da utilização da turfa nestas regiões.
Conclusão: A turfa continua a ser um componente crucial dos substratos hortícolas profissionais, particularmente em alguns sectores especializados, e serão necessários mais esforços para que alternativas sustentáveis sejam identificadas.

Palavras-chave: turfa; horticultura; substrato hortícola; sustentabilidade

ABSTRACT

Introduction: The Horticulture industry has relied on the utilisation of peat as a fundamental component of substrates for growing crops for generations. This paper analyses its utilisation within the United Kingdom and Ireland in the context of governmental proposals to cease peat extraction in these regions.
Objective: Analyse the use of peat as a cultivation substrate within the United Kingdom and Ireland.
Development: Peat has been depended on by the Horticulture industry as an essential component of most professional growing substrates for many years. However, evidence of environmental damage caused by its extraction from natural habitats has led to increasing pressure on the United Kingdom and Irish governments to implement measures to phase out its utilisation. To be able to respond to this, industry stakeholders have made significant efforts to develop substrates utilizing alternative components; however, the outcomes have only been partially successful. Some Horticulture sub-sectors may require support to be able to make a transition over a longer period to avoid being negatively impacted if a total ban on the utilisation of peat is applied in the immediate term in these regions.
Conclusion: Peat remains a crucial component of professional horticultural growing media, particularly in some specialized horticulture sub-sectors, and more efforts will be required to identify sustainable alternatives.

Keywords: peat; horticulture; growing substrate; sustainability

RESUMEN

Introducción: La industria hortícola ha dependido durante generaciones de la utilización de la turba como componente fundamental de los sustratos para el cultivo de plantas. Este artículo analiza su uso en el Reino Unido e Irlanda en el contexto de las propuestas gubernamentales para poner fin a la extracción de turba en estas regiones.
Objetivo: Analizar el uso de la turba como sustrato de cultivo hortícola en el Reino Unido e Irlanda.
Desarrollo: La industria hortícola ha dependido de la turba como un componente esencial de la mayoría de los sustratos de cultivo profesional durante muchos años. Sin embargo, la evidencia de los daños medioambientales causados por su extracción de hábitats naturales ha generado una presión creciente sobre los gobiernos del Reino Unido e Irlanda para implementar medidas destinadas a eliminar progresivamente su uso. Para poder responder a esta situación, los distintos actores de la industria han realizado esfuerzos significativos para desarrollar sustratos que utilicen componentes alternativos; no obstante, los resultados han sido solo parcialmente exitosos. Algunos subsectores de la horticultura pueden necesitar apoyo para realizar la transición en un período más prolongado, a fin de evitar impactos negativos si se aplica una prohibición total del uso de la turba de manera inmediata en estas regiones.
Conclusión: La turba sigue siendo un elemento crucial de los sustratos hortícolas profesionales, en particular en algunos subsectores hortícolas especializados, y serán necesarios mayores esfuerzos para identificar alternativas sostenibles.

Palabras clave: turba; horticultura; sustrato de cultivo; sostenibilidad

DOI: https://doi.org/10.29352/mill0230.46650

INTRODUCTION

Sphagnum peat has been the principal constituent of horticulture growing media for generations. Significant effort has been put into identifying suitable alternative materials to replace peat in recent decades, driven by changes in the regulations guiding its extraction and uses, spurred by research into climate change factors, influencers, and the general public perceptions. However, peat replacement continues to present challenges to horticulture as effective alternatives remain difficult to attain, and pressure to cease peat extraction in the United Kingdom (UK) and Ireland has continued to increase and gain support as evidence of the damage caused by its extraction from boglands multiplies (Campbell, 2020; Callaghan et al., 2021; Government of Ireland, 2023).
There are two markets for growing media with distinct requirements: the amateur retail market and the professional horticulture market. Growing media manufacturing companies that sell to both markets have been developing new products that offer full or partial peat replacement with products such as wood fibre, coir, composted green waste, and bark. Some of the materials used to replace peat originate from other industrial processes and may be considered more sustainable for that reason. There are products offering peat alternatives in varying proportions currently available for the amateur retail horticulture sector. Transitioning to peat alternative media in the professional horticulture sector has proved more challenging, due to crop-specific technical requirements. However, in some sub-sectors, coir has offered an effective alternative and is widely used, for example, in soft fruit production (Vandecasteele et al., 2023; Woznicki, 2024; Milivojević, 2025).
Assessing the sustainability of raw materials as alternatives for peat has presented difficulties as often conflicting aspects need to be considered (Bek et al., 2020; Litterick et al., 2019), and this is beyond the scope of this analysis. This article aimed to analyse the status of peat use in the context of policies developed by the UK and Irish governments in recent years, which aim to promote the phasing out of peat use to ensure the health of boglands and meet climate mitigation objectives. This analysis draws on the review of various information sources, including input from industry stakeholders, to ensure accuracy and to provide an overview of developments in peat use across horticulture sectors. It focuses on key impacts on the horticulture industry in the context of evolving UK and Irish policy objectives, which continue to target a changeover from peat use in their respective regions.

1. DEVELOPMENT

Peat and growing media in Horticulture in the United Kingdom and Ireland

During the last two decades, the UK government has targeted significant and ambitious reductions in the quantity of peat to be used for commercial and amateur horticultural purposes. In 2010, a consultation was published in which the UK government set three specific targets for England:

(i) the eradication of the usage of peat by amateur gardeners by 2020;
(ii) the eradication of the usage of peat by commercial growers by 2030;
iii) phase-out target of 2015 for the Government and the public sector on direct procurement of peat in new contracts for plants.

Although broadly working towards meeting peat substitution objectives, the industry in the UK has only achieved some partial progress towards attaining the ambitious non-mandatory targets set by the government, and extensions were granted to the industry by the different parties in government. The devolved government in Northern Ireland (NI) did not agree on the implementation of measures to meet similar targets due to specific regional contexts; however, a general commitment to peat reduction remains from all parts of the UK. Pressure to meet similar targets by the NI industry could increase in the post-Brexit framework, as the mainland UK market could become even more important for this region's producers.
The UK government targets outlined above were set within a broader background where global demand for growing media continues to rise, whilst there is increasing pressure to reduce disturbance on peatlands in the context of climate change mitigation. A report by the University of Coventry (2020) assessed the progress made towards meeting those government targets and concluded that peat contributed to around 50% of all growing media by volume at the time of the report (2020). This constituted a drop from approximately 70%, which was common in 2009; therefore, progress had been made towards the targets for peat reduction, albeit with challenges. However, this was still a way off from the target of total peat substitution, which has remained the goal for commercial horticulture growers to attain by 2030.
According to the UK's Department for Environment, Food and Rural Affairs (DEFRA), the total peat volume used in media production in the UK fell to 41% in 2020 (from 49% in 2019). Nevertheless, DEFRA also reported that sales of amateur products in the UK increased during that year due to the COVID-19 pandemic, which caused increased interest in non-professional products by amateur market consumers. It was therefore estimated that the overall volume of peat used actually increased by 9% in 2020 compared to the previous year. In more recent years, peat has continued to be required in high volumes for both professional and amateur markets, notwithstanding governments' indications, as the media manufacturing industry has continued to struggle to find suitable alternatives despite research efforts financed mostly by that industry itself (Doar, 2022; Gruda et al., 2024).

DOI: https://doi.org/10.29352/mill0230.46650

Between 1999 and 2015, two projects tracked the use of peat in horticultural growing media in the UK. From these projects, two reports were compiled:

- Monitoring the horticultural use of peat and progress towards achievement of the UK Biodiversity Action Plan targets (SP08020) (Defra 2010). Reporting on the trends between 1999 and 2009.
- CP100 Tracking peat usage in Growing Media Production – Final report 2016 (AHDB 2016).

These two reports included detailed figures for volumes of growing media and growing media ingredients (peat and alternatives) supplied to the UK amateur and professional use markets. Data presented reported on trends for 2011-2015. Data was collected for 2016 and 2017; however, the methodology guiding its collection was retrospectively considered to be inadequate. Consequently, there is no reliable data available for those years. Subsequently, an agreement was reached between the Growing Media Association (GMA), DEFRA, and the Agriculture and Horticulture Development Board (AHDB) to restart data collection from 2018; however, the data collected has not been released into the general public domain in the form of a report for reference.
In summary, the data presented in the two historic reports mentioned above indicated that:

- The overall volumes of growing media supplied in the UK fluctuated between 3.6 – 3.9 M m3 for the period 2012-2015.
- Overall, (retail and professional sector combined), the proportion of peat in growing media was reduced from 94% in 1999 to 62% in 2011, 57% in 2012, and then remained at 55-56% (56% in 2015). Anecdotal evidence indicates that steady downward progress has been maintained, with figures around 50% being quoted by manufacturing industry representatives.
- Overall, (retail and professional sector combined), the proportion of peat alternatives in growing media has increased from 6% in 1999 to 38% in 2011 and to 45% in 2013 and 2014.

Figures for the NI region specifically were not published in those reports; nevertheless, it has been reported that NI mushroom growers, for whom peat has been an essential component in casing materials, could use more than 33,500 m3 of peat for casing per annum. The mushroom sector is an important horticulture segment for both the NI and the Republic of Ireland (RoI). However, suitable, effective, and sustainable alternatives for peat have not been identified for widespread use by this sector, despite various industry groups, including the AHDB, completing extensive trials in this specialised area of crop production over the last few decades. The casing layer, which is widely used by the mushroom sector, requires black peat, which has a specific water-holding capacity and is reported to contain certain unique bacteria that are regarded as essential to stimulate mushroom production. The RoI mushroom sector, which is reportedly a big exporter of mushrooms and a leader in this field in Europe, could be severely impacted, according to representatives of the industry, if this type of peat is not available. Some stakeholders of the Irish mushroom sector could, if black peat were no longer available, consider moving production to other countries where this resource remains available (Callaghan et al., 2021).
The NI industry overall is reported to be 1/3 of the RoI industry, so calculations in relation to volumes extracted and a breakdown of usage in relation to hectares of bog required could be extrapolated from RoI submissions. According to Callaghan et al. (2021), the overall domestic usage of peat in the RoI figures shown below is much lower than the estimated total exported volumes. However, these authors and others have argued that the horticultural sectors would not be able to remain competitive if there were a peat extraction cessation in Ireland in the immediate future.

Table 1 – Estimated annual RoI domestic professional horticulture peat requirements

Estimated annual RoI domestic professional horticulture peat requirements		
Sector	**Annual volume m3**	**Product**
Mushrooms (ROI)	112,632	Casing
Nursery & ornamentals	50,000	Growing media
Fruit & Vegetable	20,000	Growing media
Total	**182,632 m3**	

According to horticultural industry members of the RoI Working Group, 388 ha of bogland, amounting to 376,000 cubic metres, were required to supply the mushroom sector (including the Irish mushroom companies in the UK) and the professional horticulture sector in Ireland in 2021. The hobby sector required the extraction of 940 ha of bogland, amounting to 470,000 cubic metres. According to Growing Media Ireland (GMI), a total area of 1,700 ha of bogland, amounting to 850,000 cubic metres, would have been required for 2021, in order for growing media manufacturers to economically justify the existence of their businesses from the point of view of harvesting, grading, mixing, and packing. These figures, both from the industry members of the working group and GMI, were supported by data from Growing Media Europe (GME) (O'Sullivan, 2021).
Taking into account that the NI industry overall is estimated to be 1/3 of the RoI industry, some calculations in relation to the extraction volumes required in this region and a breakdown of usage could be extrapolated from the RoI submissions above. An indicative figure of circa 566ha of bogland and a production of 280,500 cubic metres of peat is required to meet the NI region's

DOI: https://doi.org/10.29352/mill0230.46650

overall needs. However, although peat extracted throughout the island of Ireland is required to meet internal industry needs, the bulk of the Irish peat is exported. According to the Horticulture Trade Association (HTA) figures (2021), Northern Ireland supplied nearly 0.4 million m3, while the RoI supplied just under 1.2 million m3 of peat for growing media manufactured in mainland UK in 2020. Reportedly, around 60% of all the peat used in the UK may have been sourced from Ireland, with 8% coming from elsewhere in Europe.

It has been estimated that volumes available for peat extraction in the UK and Ireland under current licences could be exhausted in the next two decades. However, the RoI government has reportedly implemented a ban on peat extraction, which will impact Bord na Mona directly, as it is one of the largest peat processors, and could affect all media producers on the island to various degrees. If, or when, this ban is fully implemented, it could drive the overall market change much faster than anticipated. According to GMI, a peat extraction ban will likely require significant restructuring within the industry, including potentially the relocation of key growing media production sites. Therefore, it could be argued that there are presently strong incentives for the UK and Ireland's growing media industry to drive ahead with the transition to peat-free production.

HTA figures indicate that in the UK overall, more than 4 million cubic metres of growing media were used each year up until 2021. While approximately a quarter of that was said to be used by professional growers to produce plants for food and for the UK's parks and gardens, the remainder was reportedly used by amateur consumers for various purposes in their gardens. This highlights the importance of ensuring that amateur consumers and the general public are well informed and the need to gain their interest when it comes to understanding what can be involved in selecting sustainable alternatives to peat and the potential costs associated with any transition. Importantly, the production of growing media is said to provide around 1,000 jobs in the UK, an aspect that may need to be considered in deciding what peat alternatives to use in the future. If growing media production sites are to potentially be relocated due to using alternative materials, this could have a significant impact on regional economies, where, quite often, limited work opportunities exist.

1.1 Price and availability of peat replacement products

According to Growing Media Europe, over 55 million m^3 of growing media were used in the European Union (EU), and peat accounted for more than 70% of that in 2018. Figures for overall growing media use have continued to rise in recent decades, and although a lot of development effort has been put into formulating products with lower peat inputs in recent years, there are still great challenges being experienced in terms of attaining effective peat substitutions (Neumaier and Meinken, 2015; Bek et al., 2020; Gruda et al., 2024).

Peat prices were reported to have risen by more than 10-15% in 2021 following similar price increases in 2020. There was some short-term impact from global market pressures and uncertainty due to the COVID-19 pandemic and other social and economic challenges experienced in Europe and other parts of the world in recent years, but also due to policy changes in the UK and RoI. Costs may usually vary depending on volume sold and carriage required. With the benefits of proximity to manufacturing sites, bulk prices could be as low as €12-€15/m3 up to 2020. Average prices reported in the RoI for a small to medium-sized grower in 2020, for a basic medium-grade loose peat, €38/m3, with standard nursery stock growing media with amendments running to €77/m3. However, there were reports that Irish growers were quoted prices for imported peat in 2022 greater than 45% more expensive for higher volume purchases, and that rise could have been even greater, with prices doubling for smaller customers. This significant increase in price was attributed to the increase in commercial demand for the product following the UK and RoI governments' measures to reduce or stop extractions and due to higher transport costs from Eastern Europe for peat and for coir from overseas due to increased road and sea freight costs. In recent years, coir prices have reportedly increased substantially due to rising demand worldwide; therefore, with longer growing media supply chains in place since 2021, costs can be expected to continue to increase (Callaghan, et al., 2021).

Price, availability, sustainability, and consistent quality of the alternative materials currently used to replace peat are important obstacles hampering the uptake of substitute ingredients in growing media. Price is particularly sensitive to other industries' uses, especially for bark, wood-fibre, and coir. Peat continues to be the most reliable growing media component material for most horticulture crops, and it is still among the cheapest raw materials available, as licences have been paid for and all the infrastructure is in place to exploit peat in situ. Thus far, the growing media-producing industry has largely endeavoured to absorb price increases resulting from incorporating greater volumes of alternatives. According to Bord na Móna and Bulrush Horticulture Ltd. management representatives, all other ingredients can be between 2 and 6 times more expensive than peat. As the demand for alternatives increases, it will become harder to maintain relatively low prices for growing media products. In this context, some have argued that, to accelerate the move to a peat-free industry, either the government provides some financial support to the manufacturing industry, or the final consumers will eventually pay the price increases incurred directly (Callaghan et al., 2021). The manufacturers of horticulture media are perhaps viewed as a lower value, lower margin industry, and many potential peat alternative materials may be too expensive for their use since they are utilised by other, more powerful industries. To ensure cost effectiveness, raw materials used for horticulture media manufacturing must also not require further processing, or only very minimal, as this increases production costs. Alternative products currently used, such as coir, often require further processing, and this potentially could render the final products prohibitively expensive if the international demand keeps increasing at the same pace (Carlile and Coules, 2011; Barrett et al., 2016; Mulholland et al., 2017; Callaghan et al., 2021; Gruda et al., 2024).

Retail or amateur products are often substantially different from professional products, where different elements are precisely and critically added to the specific requirements of growers. Although certain raw materials could perhaps, on experimental assessments, replace peat, when formulating the finished products, the industry will balance what may be "technically viable"

DOI: https://doi.org/10.29352/mill0230.46650

against what is "commercially viable" when considering what to use. Cost effectiveness and reliable availability are critical factors in this decision process (Carlile and Coules, 2011; Barrett et al., 2016; Mulholland et al., 2017). Although alternative raw materials such as wood and coir may be currently available, there are competing factors in the world market that affect their price and availability. Pressures were felt during the Covid-19 pandemic, driving prices higher, delaying deliveries, and curtailing volumes, showing how vulnerable the industry can be if it becomes dependent on external supplies (Callaghan et al., 2021; HTA, 2021).
In this context, in addition to being commercially viable in terms of production, raw materials must be available from one or two sources in high enough volumes to meet demand. As materials such as coir, which are sourced from developing countries, become more critical to the growing media industry, producers there may need support to organize and become a stronger link in the supply chain so that they can meet the increasing world demand. It has been argued that it is not cost-effective for UK and Ireland-based manufacturers, for example, to organize the delivery of raw materials from several remote locations overseas (Neumaier and Meinken, 2015; Barrett et al., 2016). Confidentially, a leading growing media manufacturer in NI said that they sell over 450,000m3 of media per annum. For larger manufacturers, such as that one, unless any one material is available at a minimum of 10,000m3 per annum from one source at the busiest times of the year (primarily November to May), then volumes are too small to be commercially viable (Mulholland et al., 2017; Litterick et al, 2019; Callaghan et al., 2021).

1.2. Quality of available peat alternatives

The most relevant peat alternative raw materials currently used in the commercial production of professional growing media are wood fibre and coir. Other materials used to a lesser extent include dried anaerobic digestate fibre, green waste compost, composted bark, and bark fines. However, none of those products has been able to substitute peat entirely, and further research and product trialling is required before new products become commercially available. A leading growing media manufacturer has said that, for example, the maximum wood fibre content that could be added to their commercial products was 50% (P. Alexander, personal communication, 29 October 2025). Nevertheless, a high degree of peat substitution can only be effective through extensive experimentation in terms of formulation of products and their adoption by growers requires support through agronomy and technical advice to ensure viability (Carlile and Coules, 2011; Barrett et al., 2016; Litterick et al, 2019; Callaghan et al., 2021; Vandecasteele et al., 2023; Gruda et al., 2024; Woznicki et al., 2024).
Although coir is a substitute product widely used in many commercial horticulture sub-sectors, its sustainability has been questioned as it requires haulage from overseas, depends on heavy water usage for its preparation to ensure quality, and issues with social compliance relating to labourers at the source have been reported. The supply chain for coir is also vulnerable due to regional weather conditions and, therefore, not available year-round as monsoons prevent its drying. Since coir is being used globally, competition will drive its costs, which can also fluctuate with any international events that have the potential to affect haulage (Vandecasteele et al., 2023; Gruda et al., 2024).
Research and development work has shown that the quality of other products, such as green compost, must be improved as contamination by herbicides, sharps, glass, and pathogens can be major issues that need to be appropriately addressed to achieve consistency and reliability. Another main ingredient that is currently used is composted bark and composted bark fines; however, the availability of these materials can be problematic, particularly in RoI and NI, as this is imported from other regions. Imports from Scotland, for example, have become more costly due to applications of new Plant Health regulations, with the need for a plant passport following the UK's exit from the EU, rendering the process economically unsustainable in the immediate term (Carlile and Coules, 2011; Mulholland et al., 2017; Litterick et al, 2019; Callaghan et al., 2021).

1.3. Peat replacement products' usage in the UK and Ireland Horticulture Industry

Efforts to develop and promote the use of peat-free alternatives have reportedly been hindered hitherto by inconsistency and poor quality of products, which have negatively impacted adoption by horticulture crop growers and amateur consumer perceptions. However, considerable industry research has been generating improvements in the quality of peat media alternatives, and some have reportedly matched the performance of peat-based products in particular situations (Streminska, 2021; Pot et al., 2022; RHS, 2026). The report by researchers at Coventry University (2020) showed that progress had been made in setting up frameworks to drive efforts to further reductions and meet the peat use eradication goal over subsequent years. A significant step forward was the Responsible Sourcing and Manufacture of Growing Media (RSMGM) scheme, which led to the development of a system for assessing the sustainability credentials of the individual materials contained within a commercial growing media product. This scheme envisioned taking into account, as others had proposed previously, that sourcing responsibly is not a simple process where replacing peat is sufficient; other factors such as 'carbon footprints', water usage, and labour issues should be considered as part of a sustainable approach to producing growing media (Mulholland et al., 2017; Bek et al., 2020).
The implementation of that scheme in England has reportedly taken longer than anticipated; if implemented industry-wide, it would have the potential to enable both the professional sectors and the amateur consumers to make more informed choices. It remains uncertain how far and fast the transition to peat-free horticulture can realistically be put in place. Significant barriers exist due to challenges with securing sufficient volumes of good-quality alternatives at prices that are acceptable to consumers. Some leading industry manufacturers of peat-free products may already have strategically strong relationships with key suppliers of alternative products. However, increasing overall production volumes of peat alternatives may require adjustments in other industries that are affected by current policies with respect to heat and power generation. These industries can provide incentives for wood biomass sellers to focus on those market areas since they are more lucrative than growing media manufacturing (Mulholland et al., 2017; Litterick et al., 2019; Callaghan et al., 2021).

DOI: https://doi.org/10.29352/mill0230.46650

The horticulture media production industry stakeholders continue to aim to ensure retail products are peat-free to be able to meet the revised UK and Irish governments' targets. However, there are concerns that the commercial sources of sufficient alternative raw materials do not exist currently, and for these sources to develop, a high level of investment will be required. For the high degree of change targeted to happen in the short period permitted has been considered unrealistic by many in the industry, and there have been continued calls for more government support. In addition, the process to introduce a new (novel) raw material into formulations and achieve commercially viable finished products can take several years. It would, therefore, seem justifiable for the industry to require more time and support to be able to continue to meet market requirements and remain economically viable (Bek et al., 2020; Callaghan et al., 2021; Gruda et al., 2024).

One of the larger growing media producers in NI said that their overall media production volume exceeded 450,000 m3 per annum and, of this, at least 45% was peat-free (P. Alexander, Oral communication, 29 October 2025). With many of their bigger customers being under pressure to make the transition to peat alternatives, that figure would need to increase in the immediate term. The process of peat replacement has been accelerated by the reported RoI peat harvesting ban, which directly impacted Board na Mona, the main operator in the region, affecting supplies available in Ireland and the UK from 2020. However, this has also potentially contributed to the impetus to move the industry towards progressively exploring the use of other, more sustainable products, as alternatives to peat (Callaghan et al., 2021).

Although there is a need for further peat reduction in both the amateur retail and professional sectors of the industry if the government's targets are to be met, this will be dependent on the availability of suitable quantities and the quality of effective alternative materials, as mentioned previously. Obstacles to attaining the peat phasing out targets remain for both the UK and Ireland, with the most relevant alternatives currently in use still presenting challenges to the industry as they cannot effectively replace peat entirely. Some peat-free media have proved to be as good, if not better, than peat-based growing media, but in general, they reportedly require more specific formulation for certain crops than peat and have different watering and nutritional requirements, which impact crop management practices and increase production costs. This, in turn, may generate other requirements such as the need for the development of alternative systems, such as suitable standing out areas capable of recycling nutrient-rich runoff. In addition, different peat substitutes may not flow as easily in the processing chain (transplanting, potting, etc) as peat. This may cause additional issues for horticulture growers who have invested in mechanical systems, which were originally developed for peat-based growing media, to overcome manual labour shortages in recent times in the UK and Ireland. Funding and support for further research and development remain critical to the horticulture industry, particularly to secure reliable growing media for some of the more specialised professional horticulture sub-sectors (Callaghan et al., 2021; Vandecasteele et al., 2023; Gruda et al., 2024; Woznicki et al., 2024).

CONCLUSION

There has been significant progress made in recent decades towards identifying and developing effective, sustainable peat alternatives to produce growing media for horticulture crops. Nevertheless, the transition to peat-free products has been slower than anticipated and has not fully met the UK and Ireland governments' and industry targets, nor some of the public's expectations, thus far. Peat continues to be a critical element for most horticulture growing media in use by the professional market and is still available for amateur consumers in the retail market. Research and product trialling of peat-free growing media for horticulture crops will therefore continue to be required.

Considering the overall volumes of peat still being used in Northern Ireland, Great Britain, and the Republic of Ireland, plans by the UK and Irish governments for the cessation of peat extraction in the immediate term may have significant impacts on these regions' horticulture media industry manufacturers. This, in turn, has the potential to affect the horticulture industry overall and may reduce its competitiveness and capacity to meet market demands. Industry representatives have expressed concern that without some form of support, some sectors may struggle to remain viable as productivity will likely decrease at least in the short-term, risks and costs will rise overall, and the availability of alternative media will remain uncertain. For some alternative materials, issues over the supply of raw materials in high enough volumes may continue to persist, and increases in demand will need to be addressed by the manufacturers, which will require greater capability to compete with other industries for the commodities they will need. Specialist sub-sectors may be more directly impacted by peat substitution due to their specific crops' requirements. For example, a suitable alternative to peat for mushroom casing, which can be easily and widely adopted, has yet to be identified despite intensive research. Without further progress, the cessation of peat extraction could become a significant challenge for mushroom production, which is the largest horticulture sector in terms of value in Northern Ireland, with significant external sales into mainland UK.

Some have argued that a cessation in peat extraction in the UK and Ireland would not, of itself, make significant progress towards achieving the goal of peat substitution. Without industry-wide adoption of alternative growing media and without trade barriers, peat extraction may simply increase in bog lands in other parts of Europe and elsewhere as a response, and peat imports may become a necessity. It has been argued that specialist sub-sectors, such as mushroom production, should remain exempt from the peat ban until economic alternatives can be identified for wide application. Considering all the aspects impacting this context, this analysis highlights that, for progress to be made, continued constructive dialogue between government and industry stakeholders, together with increased support for research and development, and some transition support for the Horticulture industry, will all be critically important.

DOI: https://doi.org/10.29352/mill0230.46650

ACKNOWLEDGEMENTS

The author wishes to acknowledge the contributions from industry stakeholders who shared details relating to their commercial operations and their concerns regarding peat extraction cessation.

AUTHORS' CONTRIBUTION

Conceptualization, F.C.; data curation, F.C.; formal analysis, F.C.; funding acquisition, F.C.; investigation, F.C.; methodology, F.C.; project administration, F.C.; resources, F.C.; software, F.C.; supervision, F.C.; validation, F.C.; visualization, F.C.; writing – original draft, F.C.; writing – review & editing, F.C.

CONFLICT OF INTERESTS

The author declares no conflict of interests.

REFERENCES

Barrett, G. E., Alexander, P. D., Robinson, J. S., Bragg, N. C. (2016). Achieving environmentally sustainable growing media for soilless plant cultivation systems – a review. *Scientia Horticulturae, 212*, 220–234. https://doi.org/10.1016/j.scienta.2016.09.030

Bek, D., Lennartsson Turner, M., Lanari, N., Conroy, J., Evans, A. (2020). *Transitioning towards peat-free horticulture in the UK: An assessment of policy, progress, opportunities and barriers*. University of Coventry. https://shre.ink/3r0I

Callaghan, D., Walsh, L., Flanagan, D., Gaffney, M. (2021). *Challenges in Peat supply for growing media and mushroom casing in Irish Horticulture. Current impact assessment and key challenges.* Teagasc Horticulture Development Department.

Campbell, B. (2020). *Peatland restoration is vital if Northern Ireland is serious about a green recovery.* RSPB NI. https://shre.ink/3r0T

Carlile B. and Coules A. (2011). Towards sustainability in growing media. *International Symposium on Growing Media, Composting and Substrate Analysis*, 1013, 31-38. https://doi.org/10.17660/ActaHortic.2013.1013.42

Doar, N. (2022). *Analysis of the failure of voluntary measures to halt peat use in UK horticulture between 1990 and 2020.* The Wildlife Trusts. https://shre.ink/3r0M

Government of Ireland. (2023). *4th National Biodiversity Action Plan.* https://shre.ink/3tOH

Gruda, N.S., Hirschler, O. and Stuart, J. (2024). Peat reduction in horticulture – an overview of Europe. *Acta Hortic. 1391*, 545-560. https://doi.org/10.17660/ActaHortic.2024.1391.75

HTA (2021). *Growing media Monitor. Trends in the composition of UK growing media supplied 2011 to 2020*. A report compiled for Growing media Association, DEFRA, AHDB, HTA. Available on the HTA website. https://shre.ink/3tJ0

Litterick, A., Bell, J., Sellars, A., Carfrae, J. (2019). *Rapid Evidence Assessment of the Alternatives to Horticultural Peat in Scotland.* Earthcare Technical Ltd. & SRUC. https://shre.ink/3r0q

Milivojević, J., Radivojević, D., Maksimović, V. and Dragišić Maksimović, J. (2025). What fertilizer management strategy is the most effective to optimize the leaf and fruit nutrient content of soilless-grown highbush blueberries? *Acta Horticulturae 1444*, 233-240. https://doi.org/10.17660/ActaHortic.2025.1444.31

Neumaier, D. and Meinken, E. (2015). Peat substitutes in growing media – options and limitations. *Acta Horticulturae 1099*, 159-166. https://doi.org/10.17660/ActaHortic.2015.1099.16.

O'Sullivan, K. (2021). GMI calls for 'fair and workable licensing system' to be introduced 'immediately'. *Agriland. https://shre.ink/3t46*

Pot, S., Tender, C.D., Ommeslag, S., Delcour, I., Ceusters, J., Vandecasteele, B., Debode, J., & Vancampenhout, K. (2022). Elucidating the microbiome of the sustainable peat replacers composts and nature management residues. *Frontiers Microbiology, 13*, 983855. https://doi.org/10.3389/fmicb.2022.983855

Royal Horticultural Society (2026). *RHS Peat Policy.* https://shre.ink/3t4R

Streminska, M., Eveleens, B., Blok, C., Verkerke, W., Boedijn, A. (2021). Recirculation, circular fertilizers and resilience: The potential of growing media systems for circular production. *II International Symposium on Growing Media, Soilless Cultivation, and Compost Utilization in Horticulture, 1317*, 65-72. https://doi.org/10.17660/ActaHortic.2021.1317.22

Vandecasteele, B., Hofkens, M., De Zaeytijd, J., Visser, R., Melis, P. (2023). Towards environmentally sustainable growing media for strawberry cultivation: Effect of biochar and fertigation on circular use of nutrients. *Agricultural Water Management, 284,* 108361. https://doi.org/10.1016/j.agwat.2023.108361

Woznicki, T., Kusnierek, K., Vandecasteele, B., Sønsteby, A. (2024). Reuse of coir, peat, and wood fibre in strawberry production. *Frontiers in Plant Science, 14,* 1307240. https://doi.org/10.3389/fpls.2023.1307240