Welcome to the final edition of GrowForward.

Previous editions have focussed on the latest news from the Growing Media Panel and their work on the development of the sustainability criteria for growing media and have outlined responsible supply chains for raw materials in growing media like coir pith (http://www.wrap.org.uk/content/working-retailers-increase-use-sustainable-growing-media).

This last edition explores responsible supply chains of wood fibre and bark and gives an overview of anaerobic digestate. It also revisits why peat is so special, how it is protected, how the industry is regulated, the impacts of UK horticulture on peatlands and discusses whether commercial peat extraction can be sustainable or responsible.

**News**

B&Q’s 90% peat-reduced pack bedding: a revolution?

**B&Q show how peat can be replaced on a commercial scale for pack bedding.**
B&Q has succeeded once again in showing innovation and leadership at the forefront of the peat reduction and replacement debate in horticulture.

With its new bedding plant production (Figure 1), B&Q shows that peat can be replaced on a commercial scale with products that are between 95% and 99% peat free. With an estimated pack bedding market size of £360 million in the UK these changes are significant. The RSPB’s Olly Watts says ‘It’s a major step forward: peat is now shown to be unnecessary at significant volume in a key horticultural sector, with clear implications for wider change by industry and gardeners. This knocks on the head claims that wide scale peat use is essential to horticulture and even that its extraction for gardening can be justified’.

It’s great to see an NGO such as the RSPB being so positive about growing media stories!

![Figure 1 - commercial-scale bedding plant production for B&Q using their latest innovation.](image)

**How did B&Q do it?**

At its 2013 Retailer Summit B&Q posed the following four challenges to all of its growers:

- Reduce peat use and find alternatives;
- Reduce energy and fuel use;
- Reduce expanded polystyrene use; and
- Reduce the use of neonicotinoids.

One of its key suppliers, Jiffy, came up with a solution.

Working with B&Q, Jiffy’s three plants in Sri Lanka replaced the peat in their pack-bedding with coir in what B&Q calls easyGrow™ Teabag technology (Figure 2). B&Q have also replaced expanded polystyrene (EPS) packaging trays with recycled polyethylene terephthalate (r-PET) a material commonly used for drinks bottles. This too has major environmental implications and will save 22,500 cubic metres of non-degradable EPS waste from going in to UK landfill.
In readiness to meet the forthcoming sustainability criteria for growing media, B&Q is now working hard to assure that its coir pith supply chains in Sri Lanka are responsible. All three Jiffy plants are operating to auditable international standards such as ISO14001 and OHSAS 18001 accreditation, which provide robust external evidence for better environmental and occupational health and safety management.

‘Over the coming months full traceability and high ethical standards will be assured throughout the coir supply chain, incorporating forty six fibre mills and 120 coconut plantations’, says George Padelopoulos, B&Q’s Ethical Trading Manager.

Accepting that the material has been imported into the UK, B&Q believes that the carbon impact of transportation is outweighed by the reduction in the vehicles needed to distribute the same amount of plants to their stores, 40% more plants can be loaded onto each trolley compared to EPS.

The benefits don’t just stop with the replacement of peat and packaging by more sustainable alternatives. Initial trials have shown that the use of coir has also meant a reduction in the use of growth regulators and water during production, and that the growing time for plants is reduced.

But what does it mean for the rest of the industry now that the art of the possible has been demonstrated on a commercial scale?

Of course only time will tell.

Many believe that B&Q’s latest innovation could become the game changer. With coir and its mixtures with other materials already proven in a highly demanding growing environment such as soft fruit, what barriers are truly left for the wider adoption of peat alternatives and the use of responsibly sourced raw materials in other horticultural sectors?

**Perspectives**

Raw materials and supply chains.
This section focuses on the supply chains of the key raw materials for growing media. The focus for this edition is bark, wood fibre and anaerobic digestate.

Bark and wood fibre.
The origins, supply chains and potential environmental impacts of bark and wood fibre for use in growing media are discussed in this article. Key questions are provided for a retailer to ask their supplier to gain more knowledge of the raw materials they have in their products and the potential environmental impacts.

What is bark and wood fibre?
Bark, the outermost layers of trees and woody plants, when graded and processed, is used in growing media. Within horticulture there are two main bark products of interest. One is traded as mixed conifer bark containing spruce as the dominant species (>80% Spruce) with smaller quantities of fir, larch, pine and hemlock. The other is pine bark, one of the hardest barks found in the UK, which is often sold separately and used as a premium product, either as a surface mulch or as a constituent of growing media, where it is used to help with drainage and prevent water logging.

Wood fibre comes from the white woody lignin part of the tree and can be added to growing media as a sawdust material, or is manufactured from wood chips using high pressure steam to separate the fibres.

Where does bark and wood fibre come from?
Bark and wood fibre used in UK growing media originates from coniferous (softwood) trees such as spruce, pine, larch and Douglas fir - the vast majority of which is grown in the UK and the Republic of Ireland. Occasionally, some (predominantly pine bark) originates in France, Spain, Portugal or the Baltics. The vast majority of UK-grown conifers come from mono-culture plantations where the primary use of the wood is the paper (pulp) and timber industry.

What does the supply chain look like?
The supply chains of bark and wood fibre start similarly. Trees are felled and the trunks, both sawn wood and round wood, are transported to sawmills – the start of the journey for multiple wood-based products (Figure 3).
Some of the roundwood and sawlogs are then “de-barked” and the bark is sent to bark processors, including growing media manufacturers, where it is initially graded by size. Bark in its natural form is an excellent water proof barrier so larger elements are used for surface mulches (to keep moisture in the ground) and soil improvers. The smaller particles (known as bark fines) are graded out and matured for 8 – 12 weeks to increase its water holding capacity before being used in growing media. The maturation process may be assisted by the addition of a nitrogen-based fertiliser and most often takes place in bark-fine piles in the yards of the bark processor, in the open air.

The supply chain for wood fibre.

Wood fibre is made using heat and pressure to break down wood chips into fibre. Very little information is publicly available that describes the proprietary process and so the potential environmental impacts cannot be fully assessed for this article.

What is known though is that the raw material is delivered in bulk to the processing plant as wood chips. To maximise the conversion of wood chips into fibre the chips need to be as wet as possible but it is not known whether the water requirement is via artificial inputs of water applied to the heap of chips or if it’s via the natural moisture contained within the delivered chips. When the wood chips are compressed under huge amounts of pressure and heat the fibres within the chips are blown apart, the result is a mass of fibres very similar to cotton wool.

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One of the key concerns for the future is the availability of wood fibre sources\(^2\). Demand is forecast to increase dramatically in the UK over the next fifteen years. The principal reasons behind this are Government policies and incentives which encourage the use of wood as a source of renewable energy. Resulting imbalances between potential availability and forecast demand are projected across the major wood fibre sources in Britain. Such developments could result in significant supply and price pressures which would have major consequences for existing wood processing industries.

**Potential environmental impacts of bark and wood fibre.**

The environmental impacts can be viewed in terms of the forestry itself, forestry operations, impacts of processing both bark fines and wood fibre and transportation to the growing media manufacturer.

This article covers the forestry and legality of forest products; maturation of bark fines and energy use in wood fibre production.

- **Forestry**

  As bark is a co-product and wood fibre is a product of the forestry industry, both share the environmental impact of timber felling from UK woodlands.

  The impact of forestry in the UK depends on what trees are grown and whether they are native species or not. For example, softwoods are not native (with the exception of Scots Pine in the mid and northern areas of Scotland). The impacts are also related to the land use before the forest was grown. In the UK it is illegal to fell broadleaf woodland and replace it with conifers, so today this does not happen but it certainly did in the past. So the impacts are relative to the timescale you choose to look at. If this timescale is 60-100 years then the impacts are vast with respect to destruction of broadleaf woodland.

  The potential negative environmental impacts of growing commercial conifer plantations include the following:

  - Reduced biodiversity compared to broadleaf woodland;
  - Conifers too close to water courses shade them out, acidify the water and can have negative impacts on fish and other aquatic life; and
  - Un-thinned conifer shades out light, preventing it from reaching the forest floor and therefore almost nothing can grow underneath.

  Well managed plantations include a mix of broadleaf species within the woodland matrix and around the edges, with corridors linking broadleaf areas and glades. This is better for biodiversity. Well managed plantations will also ensure that stream sides are kept clear of conifers with only natural broadleaf regrowth.

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Nearly all conifer plantations under management in the UK are managed by the Forestry Commission, Natural Resources Wales and the Department of Agriculture Northern Ireland, so sourcing illegal timber from within the UK is highly unlikely. That said, unless the forest and timber is certified under PEFC\(^3\) (Programme for the Endorsement of Forest Certification) or FSC\(^4\) (Forest Stewardship Council) this doesn’t necessarily mean that these forests are operated to completely minimise the risk of environmental damage.

Certification is a far better assurance of well-managed forests. In the UK, FSC and PEFC use a very similar standard and are equitable.

Also, the UK Forestry Standard (UKFS)\(^5\) is the reference standard for sustainable forest management in the UK recommended by the Government. The UKFS provide a series of Guidelines to sustainable forest management and defines standards and requirements.

- **Legality of forest products**

The starting point for the use of any wood-based material in the UK is to ensure that it is legally harvested timber.

Since the introduction of the EU Timber Regulation\(^6\) on the 3rd March 2013, the placing on the market of illegally harvested timber or timber products derived from such timber is now prohibited. Businesses that place timber on the market such as forest owners and operators must exercise due diligence when they place the wood based material on the market. Although bark is not specifically mentioned within the current scope of the EU Timber regulation, wood in general, whether or not stripped of bark or sapwood, or in chip form is subject to the regulation. As most bark is separated from the tree within the sawmill or board mill, the legality of the tree containing the bark must be demonstrated first before further processing. The regulation is applied to EU grown timber as well as material imported from outside the EU.

Part of the due diligence process required by the regulation is that the operator must gather information on the species of timber, the country of origin and evidence indicating compliance with applicable legislation, for example felling permits, forest management plans, proof of ownership or felling rights, taxation evidence and other forest sector legislation.

- **Potential impacts during maturation of bark fines**

Some producers use nitrogen based fertilisers to aid the maturation process of bark. This is often added to piles of bark located in open yards exposed to the environment. If the run-off from this process is not contained there is a risk that it could pollute soil and water and cause eutrophication. This is also likely to be the case with chemicals like tannins and other biologically active materials that naturally occur in bark.

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\(^3\) PEFC (Programme for the Endorsement of Forest Certification) www.pefc.org/
\(^4\) FSC (Forest Stewardship Scheme) www.fsc-uk.org/
\(^5\) www.forestry.gov.uk/theukforestrystandard
that are washed out by the maturation process and exposure to rainfall. The extent of this practice in the industry is currently unknown.

Risk can be mitigated by maturing the bark in a vessel that prevents uncontrolled run-off and disposing of any leachate of accordingly.

- **Energy use in wood fibre production**

Production of wood fibre is an energy intensive process. Retailers should ask their supplier to provide information on the source of energy used in the process; if renewable alternatives could be used; and whether the supplier has made any effort to minimise energy use during production. It would also be fair to ask suppliers to calculate the energy used during production of this product.

**Key questions to ask your supplier?**

- The best way to ensure that timber comes from a well-managed and legal source is to purchase an FSC or PEFC certified product from a supplier who holds a valid chain of custody certificate; or to ask suppliers whether they purchase their raw material from FSC or PEFC certified sources (saw mills) and can demonstrate this via delivery notes and invoices. Does your supplier hold a valid chain of custody certificate that includes the sale of growing media using bark and wood fibre?
- If the bark or wood fibre does not originate from a certified operation, ask the supplier to provide evidence that due diligence was carried out to ensure that the material came from legal origins.
- Does the bark and wood fibre processor operate their business, and especially the processing operations, under ISO 14001 environmental management standards? This will ascertain whether or not they have assessed the various environmental impacts of their processing and have active management plans in place to mitigate/minimise any environmental impact.
- Is the bark matured in a contained environment to prevent pollution to soil and water from any materials leaching from the wood or materials added to aid the maturation process or can they demonstrate that no leaching of tannins and other effluent to the environment occurs from the maturation process area?
- Are energy efficiency measures adopted to reduce the high energy consumption during the production process for wood fibre?

**Anaerobic Digestate**

This short article introduces anaerobic digestion and touches on the future potential for digestate use in UK horticulture.

**What is anaerobic digestion?**

Anaerobic digestion (AD) involves the breakdown of biodegradable material in the absence of oxygen by micro-organisms.

AD is primarily of interest as a source of ‘green energy’. The breakdown of waste materials that include commercial and domestic food waste, crop waste or animal slurry produces methane and carbon dioxide, both of which can be utilised for energy production.
The other by-product of AD is the digestate itself, which potentially has much to offer the horticultural sector as a biofertiliser. It is rich in nutrients like nitrogen, phosphorus and other trace elements required for healthy plant growth and fertile soil. The digestate is a stable product, if PAS110 certified\(^7\), and less likely to cause pollution than the waste it originated from and its fibrous portion adds to soil structure.

As such, AD could be a key to closing the nutrient recycling loop and reducing the use of primary resources and fertilisers. This is highly appealing in many ways, particularly in times when phosphate is a finite resource and the costs of chemical fertilizers are rising.

The question then is how can biofertiliser be utilised to support plant growth and how reproducible is it as a product?

**What is the verdict so far for horticulture?**

The number of AD plants in the UK is rising, meaning that if we can crack its use in horticulture there is potentially a well-distributed supply of raw material. WRAP has funded work to identify the locations of AD facilities and place them on a map of the UK\(^8\).

There is growing evidence that suggests that, provided the recommended nutrient and electrical conductivity (EC) levels are considered, whole, liquor and fibre digestate, in combination with other standard industry ingredients, can be used for protected crop production. In such cases, digestates can be used to effectively replace synthetic fertiliser inputs or peat, often with no compromise in crop quality and yield.

WRAP is undertaking early feasibility trials of anaerobic digestate in various horticultural applications. Early results are encouraging although, as with any preliminary scientific results, there are caveats.

What we do know is that positive results have been seen for using digestate in mixtures with other materials, such as bark, and incorporating into liquid feeds and container composts.

**And the future?**

There is certainly enough positive evidence to justify continued studies to determine the full potential of digestate in horticulture, along with the risks and commercial cost-benefits.

Of course there are challenges, mostly around the reproducibility of digestate with a varying feedstock and in identifying the treatment of the digestate to optimise its use for horticultural application. The highly potent nature of digestate means that it needs to be managed carefully and appropriate handling guidelines need to be determined for the sector.

Currently there are also issues around permitting that will need to be resolved before digestate can be used more widely. From a legislative

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\(^8\) [http://www.biogas-info.co.uk/maps/index2.htm](http://www.biogas-info.co.uk/maps/index2.htm)
perspective, the Anaerobic Digestion Quality Protocol (ADQP)\(^9\) sets out criteria for the quality outputs from anaerobic digestion of biowaste. Currently, the ADQP does not specify the use of digestate in horticulture/growing media (regardless of whether the material has achieved PAS110 status\(^10\)). This constraint may be lifted as an increasing body of scientific evidence about the suitability for digestate use in ornamental horticulture emerges.

WRAP and others continue to work on demonstration trials and field experiments. The aim is to provide end users with good practice guidance for using digestate based on clear and robust evidence and commercially tested methods of application.

The challenge, as always, is that alternative materials to peat are compared to existing peat products in terms of performance and cost before they are accepted to the market. A vast amount of research over the last 20 years and more has been undertaken to perfect peat use in growing media. The raw material is relatively inexpensive, often being sold as a loss-leader by retailers, which makes for a high barrier to entry for any alternative material in this market.

**Why the focus is still on peat reduction.**

As the industry continues work to develop the new sustainability criteria for raw materials for growing media, the voluntary mechanisms for compliance and a new performance standard one thing remains certain.

The environmental need for peat reduction remains and Defra’s voluntary targets to do so have never been more important. From the industry’s point of view finding alternatives to peat will also alleviate an over reliance on a single raw material the supply of which is subject to disruption by the weather.

This article covers the following:

- Why peatlands are so special, how they are protected and how the extraction industry is regulated;
- The impacts of UK horticulture on peat, covering how commercial peat extraction methods damage the environment and the state of the peatlands in the countries the UK sources its peat from; and
- Discusses whether commercial peat extraction can be termed sustainable or responsible and what a retailer can do to source peat more responsibly.

**Why is peat so special?**

*Lowland raised bogs are the rarest and most threatened habitats in Europe. The majority of commercial peat extraction for horticulture occurs on this specific habitat.*

The following provides a short summary of what peat and lowland raised bogs are and what makes them so special.

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\(^10\) Publically Available Specification (PAS110) creates an industry specification against which producers can verify that the digested materials are of a consistent quality.
**What is a lowland raised bog?**

Peat is preserved and partially decayed organic material that forms in the waterlogged conditions of bogs and fens. These conditions favour the growth of mosses, especially sphagnum, along with other plants. Because of the lack of oxygen in the bog, when the plants die they do not decompose and instead slowly accumulate as peat.

The majority of peat used in growing media is harvested from lowland raised peat bogs, which occur in shallow basins or on flat, low lying areas where poor drainage waterlogs the ground and slows down plant decay. Over thousands of years, layers of sphagnum moss have developed into huge peat domes. These can rise up to ten metres above the landscape, having started growth on the original lake floor.

There are many reasons why lowland raised bogs are special such as:

- Rare habitat - raised peat bogs are 98% water (by weight) and are dependent solely on rainwater rather than linkage to surface or groundwater bodies (although some do have the influence of drainage water from surrounding areas with Somerset being a prime example). As a result, the acidic nutrient poor environment provides a rare and specialist wildlife habitat (Figure 4).

![Figure 4 – an intact lowland raised bog.](image)

- Water storage and flood prevention - lowland raised bogs are important for water storage and, in some cases, flood prevention. They are of international historic value in providing an archive that records climate, vegetation and landscape change over the past 10,000 years.

- Carbon stores - peatlands in general are extremely important terrestrial stores of carbon which are locked up in the peat. Although they only cover 3% of the world’s surface they contain 30% of the carbon stored in the world’s soils, twice as much as the world’s forests. If they are drained, the carbon is released slowly back into the atmosphere, adding to the greenhouse effect and contributing to climate change.

Commercial peat extraction for horticulture (and energy) at unsustainable rates, along with drainage for agriculture, pose serious threats to this
habitat in Western Europe. As a result intact lowland raised bog is one of Western Europe’s rarest and most threatened habitats.

Are peatlands protected and is the peat extraction industry regulated?

The high value of peatlands, including lowland raised bog, is recognised through a variety of international legislation and conventions, national laws and regulations to protect most, but not all, high biodiversity value peatlands as follows:

- **The EU Habitats Directive** and **EU Birds Directive** protect sites in Europe through a network of Natura 2000 sites. These sites are made up of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), respectively. Many peatland areas in Europe are directly designated in this way and due diligence needs to be undertaken to ensure that peat is not sourced directly from these sites or from adjacent sites that have an impact on the designated sites.

- **The Convention on Wetlands of International Importance**, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Over one thousand sites in Europe are protected by Ramsar.

- **Environmental Impact Assessment** – compliance with the EU’s Environmental Impact Assessment may mean that planning and environmental law in countries that extract peat will require the operator to undertake an Environmental Impact Assessment before extraction takes place. This will ensure that the site chosen is suitable for peat extraction and the environmental impacts are minimised.

- **Integrated Pollution Prevention and Control (IPPC)** – this EU directive is relevant to large scale industrial and agricultural concerns, including peat extraction sites. It aims to reduce emissions to air, water and land, reduce waste and use energy/resources efficiently. The largest peat extraction company in the Republic of Ireland, Bord na Mona, currently holds an IPPC licence. Under IPPC licensing a peatland restoration plan must be drawn up and implemented for the industrial peat extraction site.

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Impacts of UK horticulture on peatlands.

England uses more peat than it produces, so we import peat and export significant environmental impacts. This article explores the impacts that can be broadly attributed to horticulture in the UK.

**Peat consumption.**

In England alone, the use of peat in horticulture far outstrips the volume of peat extracted in England itself. English consumers and businesses are estimated to have used 2.4 million cubic metres of peat in 2009; five times the amount sold by English peat extractors.

The majority of peat used by growing media manufacturers in the UK originates from raised peat bogs in the Republic of Ireland. This is supplemented with peat from the United Kingdom, Estonia, Lithuania, Latvia and even Canada. The relative proportions of each are Republic of Ireland (51%), UK (37%) and Northern Europe (11%)\(^{15}\). These proportions vary and depend on the dryness of the peat harvesting season in Ireland and the rest of Europe.

English consumption could therefore be responsible for exporting environmental impacts overseas and degrading internationally important habitats, contrary to the principles of the Convention of Biological Diversity.

**What causes the environmental impact?**

The scale and methods used for commercial peat extraction methods are key to the destruction caused to the peatlands. There are two main types of extraction process – milled peat and sods and blocks.

- *Milled peat (horizontal extraction)*

The most common method of commercial peat extraction is the milling method. This method removes thin layers of a peat deposit in short cycles.

Before milling, the bog is extensively drained. This may take many years and involves progressively increasing the depths of the drains to help dry the peat and support the weight of the milling machines. All surface vegetation – i.e. peatland wildlife habitat - is removed from the site to expose the bare peat and the ground is levelled (Figure 5).

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Once drained, the top 12–15 mm layer of a peat deposit is milled to produce a powdery peat that is left to dry. It is turned several times using a harrow to enhance drying and to loosen the peat particles. The dried peat layer is gathered into ridges and is collected by a large vacuum harvester. The peat particles are sorted according to quality and size for onward use in horticulture.

Once the peat is removed from the field a new milling is repeated. In a given extraction season, depending on the qualitative characteristics of the deposit layer, machinery involved and weather conditions, between 10 to 50 cycles are performed\textsuperscript{16}.

The mechanisation level in this process is almost 100% which, over the years, has significantly reduced the numbers of people employed by the peat extraction industry.

- **Sods and blocks (vertical extraction)**

Sod peat is harvested using the modern ‘cutting box’ technique, in which a defined number of sods are mechanically cut from the peat deposits. After extraction, sod peat undergoes a complex process of fractioning to extract the various elements from the peat profile of the sods and blocks.

Sods and blocks are cut in Ireland, Sweden, Russia, Latvia, Lithuania and Poland. Hydraulic cranes can be used to increase the productivity of this process by cutting a number of blocks at the same time. Peat digging machines are also used.

**The generic environmental impacts of peat extraction**

The environmental impacts of peat extraction for horticultural use have been widely documented and debated. As a quick summary the impacts can be categorised at the following four spatial levels:-

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\textsuperscript{16} The exact number of cycles depends on the length of the harvesting season. Bord na Mona quote 12 harvests per annum \url{http://www.bordnamona.ie/our-company/our-businesses/feedstock/peat/peat-harvesting/} whilst the Baltic States may have longer seasons permitting 20 – 50 cycles \url{http://www.belfuel.eu/peat-extraction-technology/}. 

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• **Direct impacts** at the site of peat extraction – the milling technique completely destroys all surface vegetation (peatland wildlife habitat) and requires the drainage of the peatland. This results in large areas of bare peat with massive losses in biodiversity as new areas of peatland are utilised, and losses in hydrological function. Bare peat allows more of the carbon store in land to be lost through oxidation and wind erosion. Drainage makes the peatland more susceptible to fires and dust storms (Figure 6) – both of which have an impact on the local environs.

• **Impacts on the surrounding area** include the reduction and destruction of existing hydrological function through drainage on peatland adjacent to the extraction site and land within the same catchment.

• **Impacts on the regional and global** biodiversity through the destruction of local, national and internationally significant habitat and species.

• **Impacts on global climate change** through the removal of vast carbon stores in the ground and the release of carbon to the atmosphere over time through oxidation and wind erosion.

*Figure 6 – drainage and removal of vegetation result in huge areas of bare peat which oxidizes and is subject to wind erosion. This picture shows a resultant dust storm.*

**The state of peatlands in the countries the UK sources its peat**

The following provides a synopsis of the current state of peatlands in the countries from which the UK sources its peat for horticulture and the potential further impacts of extraction.

• **England and Scotland**

The current scale of peat extraction in England and Scotland is not readily determined. The most recent assessment was made in 2008 when the area of peat extraction sites in England, Scotland (horticulture) and Wales
was estimated to be 4573, 1021 and 479 hectares, respectively. The figure for Wales was recorded as two sites in the Directory of Mines and Quarries, although there is no reported commercial peat extraction in Wales.

Peat extraction in England and Scotland is undertaken at a number of sites. The status of these sites is subject to change but in 2009 eighteen extraction facilities were operating in England, with thirteen active sites in Scotland - although a greater number than this had active planning consent.

The status of UK peatlands suggest that more than 80% are damaged with the remaining peatlands eroded, modified or destroyed through commercial extraction or conversion to other land uses. Even the best protected sites (under EU legislation) have suffered, with less than 50% in a favourable condition.

- **Ireland**

According to Ireland's official report to the Convention on Biological Diversity (2010), "it is estimated that there has been a 99% loss of the original area of actively growing raised bog, and one-third of the remaining 1% has been lost in the last 10 years. Although the best examples of raised bogs are now designated as Natura 2000 sites, deterioration of the hydrological conditions caused by peat cutting, drainage, afforestation and burning severely threatens the viability of the habitat at most locations".

It has been estimated that peat harvesting operations cover approximately 100,000 hectares in Ireland (about 1/70th of Ireland's total land area) with an annual harvest estimated as 2.5 million cubic metres. The majority of the extraction is for energy use, for example 90% of Bord na Mona’s extraction is for energy.

- **The Baltic States & Canada**

Although the majority of the UK’s peat comes from Ireland, in a wet season peat is also imported from the Baltic States (Estonia, Latvia and Lithuania) and Canada. The context for extraction in these countries is briefly considered in the following section:-


18 Basis of UK BAP target for the reduction of use of peat in horticulture. 2009. Defra Report SP0573.


21 http://www.ipcc.ie/a-to-z-peatlands/peatland-action-plan/over-exploitation-of-peatlands-for-peat/
The Baltic States

With massive losses in the peatland habitat in Western and southern Europe it is widely accepted that Central and Eastern Europe occupy a ‘frontier’ position. Central Europe still harbours many excellent examples of peatland types that are virtually extinct further west. As such, the peatlands of the Baltic States are of even greater importance for the maintenance of the continents biodiversity.

Agriculture, commercial extraction of peat and other factors have all had impacts on the peatlands in the Baltic States. Estonia, Latvia and Lithuania have suffered significant losses of peatlands (67%, 53% and 60%, respectively). Although each country has protected some of its peatland areas under the EU Habitats and Birds Directive, there is evidence that some of the protected sites are significantly influenced by drainage due to extraction activity in close proximity to the borders of the conservation areas (Figure 7) and commercial peat extraction directly within the sites.

The restoration of damaged bogs is not currently widely undertaken in the Baltics and about 15,000 ha of former extraction sites are currently not rehabilitated at all.

Figure 7 – this shows commercial peat extraction on the north-east edge of the Palsu Purvs in Latvia, a designated Natura 2000 site. The extraction site is quite literally on the border of the reserve which can be seen to the south west of the extraction site in the picture.

Canada

Canada is the leading world peat producer and the market is steadily growing in size, especially in the United States.
Approximately 99% of Canada’s total national production comes from the combined operations of the 20 corporate groups that form the Canadian Sphagnum Peat Moss Association (CSPMA). Collectively, they extract about 0.02 percent of the country’s 270 million acres of peat bogs. A typical peat works in Quebec is shown in Figure 8.

Figure 8 – a typical Canadian peat extraction operation.

The CSPMA claims that, as a result of the extraction industry only removing a very small percentage of peat from the vast areas available, ‘peat in Canada is growing more than 70 times as fast as it is being harvested’. Of course this is not an accurate statement on a bog by bog basis where commercial extraction rates far exceed the re-generation rate.

The Canadian government’s regulations require that bogs be returned to functioning wetlands once extraction is complete. The North American Wetlands Conservation Council estimates that harvested peatlands can be restored to “ecologically balanced systems” within 5-20 years after peat harvesting. This is different to an objective to restore the habitat that was lost through extraction.

Can commercial peat extraction be ‘sustainable’ or ‘responsible’ and what can a retailer do?

This short article explores the meaning of ‘sustainable’ and ‘responsible’ in the context of natural resource use. It outlines the difficulties in describing commercial peat extraction as sustainable. But what does ‘responsible’ mean? Is it simply the least-worst option where peat use is to

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continue? The final section outlines what responsible retailers can do to assure a good source of peat, if peat reduction is not currently an option.

**Can commercial peat extraction be sustainable?**

The term “sustainable”, when talking about the consumption of natural resources or development, is often used with the principles outlined by the Brundtland Commission of the United Nations in 1987 in mind. These state that “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

In the context of natural resource use, the extraction of a raw material can be viewed as sustainable if the raw material is renewable over a reasonable timeframe. Some may argue that worldwide peat is being deposited faster than it is being commercially extracted and so its extraction is sustainable.

When talking of extraction, peatlands are not all the same and so cannot be accounted for on a generic or global scale in this way. To begin with, there are many different types of peatlands and within each peatland type the ecology changes across different regions. Also, the raised bogs where commercial extraction take place are one of the more threatened habitats in Europe.

It cannot therefore be reasonably argued that commercial peat extraction is sustainable using the argument that destruction of peatlands in one area can be justified because the growth of bogs in Canada or elsewhere offset the loss.

So the sustainability argument needs to be made on a ‘per-bog’ basis.

On a ‘per-bog’ basis for peat extraction to be sustainable, the rate of extraction would need to equal or approach the rate of the deposition on a per bog (raised bog) basis. Peat forms at the rate of about 1mm per year on an intact bog. In most commercial operations it is extracted, on average, at a rate of about 200mm per year. Also whilst a bog is being extracted it cannot be growing at the same time. So extraction far outstrips deposition at current commercial rates.

Some peat extractors qualify their claim to be sustainably harvesting peat by having a restoration plan in place. Although this is a good step forward the presence of a restoration plan will still not really make peat extraction sustainable over a reasonable timeframe. Such plans, if implemented, might make peat extraction slightly less impactful in the very long term but peat deposits will have been lost, along with the associated carbon stores and climate change implications. Even if sufficient peat depth is left to restore and some of the hydrological function is restored, it takes many decades for the rich mosaic of biodiversity typical of a natural bog to become established.

Perhaps where the term ‘sustainable peat’ could be used more accurately is when describing the harvesting of sphagnum moss itself from the
surface of living peat areas without destroying the underlying peat. Sphagnum moss is renewable as it can be cultivated, but sphagnum moss is not the same as peat. The sphagnum vegetation (the “stuff on the top”) is the living part of a peat system (the acrotelm). Its’ harvesting involves low pressure, specially designed vehicles and no drainage of the peatlands. This approach is still in its early stages but potentially, could provide an alternative to peat in the future.

**Can commercial peat extraction be responsible?**

The industry, particularly in mainland Europe, is using the term ‘responsible’ to describe peat extracted from already degraded peatland, never pristine bog, and an extraction site that has a plan for restoration in place post-extraction.

The reasoning behind this definition of ‘responsibility’ is that if peat is taken from peatlands that are already degraded, rather than pristine, then biodiversity and loss of hydrology function will be reduced. The logic of this argument is these peatlands have already been destroyed and little or no further destruction takes place. The complication here is the description of what ‘degraded’ peatlands are as a starting point.

The other concern is that currently few extraction sites worldwide have been restored. A few of those that have been restored are looking promising, although several others (including large areas) are decidedly not doing so, as yet.

Although taking greater responsibility is a step forward, some NGOs may argue that where peat extraction means an irreversible loss of significant terrestrial carbon stores and a biodiversity loss from some of Europe’s most endangered habitats then peat extraction cannot really be termed responsible.

**Questions retailers should ask to reduce peat or at least ensure that it is sourced responsibly.**

B&Q innovated with its supply chain by setting suppliers a great challenge. If this is a step too far for your business there are still questions that every retailer should ask of their suppliers.

- **Seek an alternative material to peat.**
  
  First and foremost responsible retailers should always ask for alternatives to peat in their products without compromising product performance and quality.

- **Ask your suppliers for their peat-reduction policies.**
  
  Ask your suppliers what policies and measures are implemented to reduce, and end, their reliance on peat and peat-based products and
production. In the UK, all members of the Growing Media Initiative\(^\text{23}\) have such policies and plans which can be used as a useful reference for the development of in-house policies.

Encourage your supplier to join the Growing Media Initiative which supports businesses to meet the government’s targets for the reduction of peat use. All members are committed to achieving a 90% peat reduction.

- **Know where your peat comes from.**

  If alternatives to peat are not possible the first step towards responsibly sourcing peat is to know the bog that your peat comes from. Senior industry figures have suggested that there are no real obstacles for creating traceability and transparency in the peat supply chain. Much information is currently available on peat excavation areas, the peat operators and the implementation of government regulations.

- **Does the peat extraction comply with all EU regulations and country-specific legislation?**

  Once you know the origin of your peat ask the supplier to confirm the following:

  - has the appropriate planning permission been granted to the peat extraction site?
  - has a credible Environmental Impact Assessment (EIA) for the extraction site of the peat been carried out?
  - can they provide that that it does not impact on a site with conservation designations e.g. SSSI’s, SAC’s, SPA’s; and
  - have they applied for an IPPC licence, if required in the country of origin?

  Peat producing companies should be able to prove that they have all the applicable licences and permits. They should also be able to prove that they conform to all other legal requirements for producing peat at all their production sites, including non-certified sites, and abandoned sites for which they bear legal responsibility.

- **Is peat extraction adversely impacting biodiversity, ecosystems or archaeology?**

  Not all potential extraction sites for peat have a conservation designation, particularly those in the Baltics, and yet they hold significant conservation, archaeological and ecological value. There is also the potential for extraction activity to damage adjacent un-worked sites of high value.

A robust Environmental Impact Assessment should alert the operator to these risks and outline plans for mitigating any risks. However, not all peat extraction sites have EIA’s – in fact very few do.

Can the suppliers prove to you that they have undertaken at least some risk assessment to ensure that their extraction activity does not or will not impact on a site or an un-worked adjacent site of high conservation, ecological or archaeological value, including undermining water tables and ecological function?

The highest impacts will likely be on new extraction sites - even those not currently protected by law, particularly in the Baltics. The Growing Media Initiative’s guidance is to not use peat from concessions opened since 2004.

- **Is a restoration plan for the peat extraction site in place?**

Peat should only be accepted from operators with a restoration plan in place.

Ask the supplier for details of their after-use measures for the bog at the originating peat extraction site. Can they demonstrate how the implementation of such plans is absolutely guaranteed? The exact nature of after-use will likely be determined by the relevant planning authority and specified in the planning consent and license to operate. The best case scenario, in terms of the environment and nature conservation, would be rehabilitation of the sites to restore all of the hydrology and habitat destroyed by peat extraction. Clearly the ability to do this will depend on the availability of funding and practicality. Alternative options include plans for agriculture, forestry, recreation, wildlife habitat and biodiversity, but peatlands should never be left bare.

The UK’s GMI also stipulates that its members should ensure that the sites are operated in such a way as to leave a sufficient layer of peat to facilitate the re-establishment of bog flora and fauna.