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IT IS TIME TO PHASE-OUT THE USE OF PEAT IN ORGANIC HORTICULTURE

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Abstract: Peatlands are vital to the wider environment in terms of their biodiversity, to aid natural flood management and as significant carbon stores. In view of this, the UK Government has developed a framework for the restoration and protection of peatlands in England, including targets for phasing-out the use of peat in horticulture. To support organic growers working towards this ambition, the activities of the UK Growing Media Initiative (GMI) were reviewed, together with research evaluating the performance of peat-free growing media approved for use in organic horticulture. The GMI's work has focused on how to define sustainable growing media and the Responsible Sourcing and Manufacture of Growing Media Calculator is now available for use. By using the calculator together with the results from fitness for purpose trials, the organic horticulture sector has a real opportunity to set its own benchmark for what it would consider to be responsibly sourced materials and to develop its own roadmap to successfully end the use of peat.

Introduction: The importance of peatlands as habitats supporting vital biodiversity of flora and fauna, for helping with natural flood management, for improving water quality and as one of the world's most significant carbon sinks are now widely recognised and the urgency for ending further drainage of peat bogs and peat extraction has been highlighted (Defra 2018). In the UK, targets to phase-out peat use in horticulture were set by the UK Government in 2011 and reiterated in 2018 (Defra 2018); challenging the industry to phase-out peat in the amateur sector by 2020 and in the professional sector by 2030. In order to achieve this, the government instigated a Task Force and through the industry initiative, GMI, a roadmap for the responsible sourcing and manufacture of growing media was established. Although GMI has not focussed specifically on the replacement of peat in organic horticulture, important achievements have been made and the lessons learnt will be just as important for the organic sector. In UK organic horticulture, peat is rarely used as a soil improver, but considerable quantities are used for casings in mushroom production and there is still a high reliance on peat in growing media for containerised production (Organic-PLUS 2018).

Material and methods: The activities, results and outputs of the GMI have been reviewed to assess how the findings of this work could be applied in organic horticulture. The GMI has focused primarily on the definition of sustainable growing media and on developing a standard protocol for testing their performance. The Responsible Sourcing Calculator, which was developed by the industry and subject experts, can be used to evaluate environmental and social sustainability of peat and non-peat materials, considering how the materials are sourced, processed and manufactured (HTA/GMA 2018).

The assessment is based on seven criteria: 1) Energy use; 2) Water use; 3) Social compliance; 4) Habitat and biodiversity; 5) Pollution; 6) Renewability and 7) Resource use efficiency. For each criterion a decision tree has been developed, allowing the user to arrive at a score of 0-20, illustrated by a traffic light system. There are guidelines and a spreadsheet to allow easy accumulation of the information, with a summary sheet for the scores of specific materials or mixes thereof. The most commonly used peat alternatives were used as examples in the development of the calculator, including wood-fibre, bark, coir and green compost. Over the last 10 years, extensive research has also been undertaken in the UK to test the performance of peat-free/reduced media; mainly media for conventional growers, but also including research on media appropriate for organic horticulture. This work was reviewed by examining published research reports and through consultation with the industry.

Results:

The Responsible Sourcing Calculator scores for the example materials used to develop the calculator (HTA/GMA 2018) are shown in Table 1. These examples included extruded wood-fibre, bark, coir and green compost. Examples of peat and minerals have not yet been fully evaluated by the calculator and, therefore, only the scores for two of the criteria were noted for these materials, as per the information in the guidance notes (Table 1; HTA/GMA 2018). Peat and vermiculite examples scored red for the habitat/biodiversity and renewability criteria and as these materials are non-renewable within 1000 years, the renewability score cannot be improved, whereas, for habitat/ biodiversity the scores could be potentially be improved to yellow (16) depending on the restoration plan in place for the sites. The wood-fibre and green compost samples scored red for social compliance; but these scores could be feasibly be improved by evidencing social compliance for each company in the supply chain. The green compost example scored green for 3 of the 7 criteria. Within the assessment, only the bulky materials in the media are considered, but as most of these (but not all) are the same as those used in growing media approved for use in organic production, the results generally apply also to the organic sector. Results from recent research to develop peat free growing media were reported in AHDB (2018). Research undertaken by the RHS/AHDB Fellowship highlighted that peat-free and reduced peat growing media, including blends of coir, green compost, bark and wood-fibre, tested for conventional ornamental nursery production, could be used commercially with little or no modification to existing practices (AHDB 2018). A laboratory standard operating procedure and model to accurately select for high performance blends of different peat alternatives have also been developed and successfully applied to select media for different uses, including vegetable propagation, mushrooms, bedding plant and nursery stock propagation and production (AHDB 2018).

Although most peat-free growing media available on the UK market are not acceptable for use in organic systems as they have been formulated with non-approved fertilisers, there are some products that organic growers can use, including media based on coir, bark, wood-fibre, green compost and composted bracken blended with wool. The bulky materials in some of these media have been evaluated using the responsible sourcing calculator and they have also been tested to evaluate fitness-for-different-purposes, e.g. for raising vegetable transplants. Many of the materials have been on the market for several years and have thus been trialled under practical commercial conditions. For organic production there is also interest using on-farm produced substrates, sourcing local resources as ingredients. One example is the woodchip compost developed by Tolhurst Organic, which is a medium based on woodchip (woody prunings from on-farm agro-forestry and local tree surgeons) composted for 12-18 months, then sieved and blended with vermiculite and lime. This product has been tested in Innovative Farmers Field Lab trials for propagating organic vegetable transplants (leeks and cabbage), with results showing good performance against the standard growing media control, both in terms of growth of the transplants and of the plants in the field after transplanting (Innovative Farmers 2014).

Discussion: Full details of the accreditation scheme for the Responsible Sourcing of Growing Media scheme are still to be agreed and work is in progress to determine the threshold for products to be considered as responsibly sourced and manufactured. However, the outputs and the learnings from the initiative can already be used to inform the organic horticulture sector and by using the calculator together with results from fitness-for-purpose trials and practical experience, the organic sector can set its own benchmark and align this to accreditation through the organic farming standards. Prohibiting the use of peat as soil improver in organic horticulture, as in the Soil Association Standards (2019), would be an important first step, though in the UK this would only have a limited impact in practice as peat is rarely used by organic growers for this purpose. In order for the organic sector to also phase-out the use of peat in growing media, participatory research to gather further evidence and experience of the performance of peat-free substrates should be continued to ensure that growers have the opportunity to learn to use these materials to achieve the best results. Similarly, further actions are needed to replace peat casings in organic mushroom production. Investigations are also required to identify and address the barriers and opportunities for increasing the supply of peat-free media to meet the demand in the organic sector. By following the roadmap developed for phasing-out the use of peat in UK horticulture, the organic sector is now well placed to set its own targets, and by acting with some urgency, the organic sector has an opportunity to lead the way, and end its use of peat before 2030.

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Image:

Criteria	Wood-fibre	Coir	Green compost	Bark	Peat	Minerals (vermiculite)
Energy	6	12	14	10		
Water	16	6	20	20		
Social compliance	5	13	5	9		
Habitat & biodiversity	13	12	20	15	16 4	16 0
Pollution	12	8	12	12		
Renewability	17	20	20	17	1	1
Resource use efficiency	15	15	6	15		

Table 1. Responsible sourcing calculator scores of example materials (source: HTA/GMA 2018).

Disclosure of Interest: None Declared

Keywords: organic horticulture, peat, peat-free growing media, vegetable transplants