



Helmsley Walled Garden

Use of Peat and Peat Substitutes

Background

In the UK we use on average 3.4 million cubic metres of peat each year. Of this, 38% comes from within the UK, 56% from the Republic of Ireland and 6% from Northern Europe. The UK has lost 94% of its lowland raised peatbogs, only 6,000 hectares remain.

The government has set a target date of 2030 for the horticultural trade to end its use of peat. The government and the horticultural industry are looking to find a sustainable alternative to peat and the coming years will see multi-purpose composts with increasing amounts of alternative content. As these mixtures do not behave in the same way as traditional peat mixes, home gardeners and commercial horticulture will need to learn how to best use these new composts.

Some Historical Context

Pre the 1960s, gardeners would make their own potting compost and prepare a section of the garden as a seed bed and plant nursery. If buying in new plants, they would buy them bare-rooted in the dormant winter months or grow them from seed which required a greenhouse. Bare-rooted stock was only available in the dormant winter months, and successful growing from seed required a greenhouse.

The advent of the plastic plant pot and multipurpose compost changed all that. Plants could now be potted up cheaply and sold all year round and so the garden centre was born. With smaller gardens, less time and higher levels of disposable income, people were looking for quicker ways to plant up their gardens and ready grown plants in two and three litre pots met their needs. Modern gardeners embraced these changes and flocked to garden centres. But now with increased ecological awareness, concerns are being raised about the levels of peat required to feed the need for garden compost and everyone has a mountain of plastic pots which cannot be recycled.

Today seeds sold in this country are produced from all over the world. Plant cuttings are produced in far-flung locations such as Israel and Kenya. Large quantities of plants are grown in Italy and the Netherlands and shipped over. Horticulture is no longer a back garden activity supported by local or national nurseries, but an international industry employing thousands. In the UK alone it has a turnover of £5bn.

Some Problems of Terminology

There are some problems of terminology associated with the term compost; it helps if we use the terms substrate and soil conditioner.

A substrate is a term used by horticulturalists for the media in which plants grow. So plants can be grown in a mixture of differing quantities of sand, silt and clay; the elements that make up soil. This often comes with a description relating to the higher quantity of one element, for example a clay soil, or a sandy soil. A mixture of sand, silt and clay with balanced element of feed and organic matter is often referred to as a loam. Plants can also be grown in peat or multi-purpose compost which is often a mixture of peat and loam.

A soil conditioner may be added to a substrate to improve or maintain its structure. Soil conditioners can be leaf mould, farm-yard manure, garden compost, forestry (largely bark-based) products or a mixture of these. It can also be a green manure: a plant grown in situ and dug into the soil, for example *Phacelia tanacetifolia*. You will also find in some older garden books reference to the use of peat as a soil conditioner, but this is no longer a recognised practice.

Garden soil is improved by the addition of a soil conditioner. You do not grow plants in a soil conditioner; you grow plants in a substrate.

Some Problems of Peat Alternatives

What then of multi-purpose compost and grow bags? These can have upwards of 75% peat content and as a substrate peat takes some beating. It holds water and nutrients well, and releases them steadily to plants. It forms air pockets or pores to provide oxygen to plant roots and allow for drainage. It is light and clean to use, holds no foreign material and is sterile. It is easily abstracted and available and has largely become common place within domestic gardening and commercial horticulture. The industry is largely built around it but it is not economically or environmentally sustainable in the longer term and neither is the principle of destroying one landscape to improve another landscape.

A number of horticultural trade organisations and government research initiatives have sought to find alternatives, initially by increasing the amount of alternative material and reducing the amount of peat. These are sold as peat-reduced multi-purpose compost. Some of the alternatives used have included soil conditioners such as forestry-bark based products, composted local authority waste from wheelie bins and coir, the husk from coconut. But there are problems!

Coir has to be shipped from tropical countries with considerable environmental costs. However it can be argued that it provides a fair trade for these countries. Bark products and local waste involves considerable processing of the materials. All these alternatives involve increased transportation costs leading some within the horticultural trade to argue that this is equally unsustainable as the use of peat.

The solution may involve increasing the use of soil but again is this any less sustainable for the environments robbed of their topsoil than those robbed of peat?

None of the alternatives currently match the functionality of peat. Commercial companies are seeking to find alternatives but their research is not available to the public, citing the need to maintain commercial confidentiality. The consequence is you are unlikely to find a detailed list of ingredients on your bag of multipurpose compost.

There are some common themes that you will have to watch whilst using these changing multi-purpose composts. Increased use of coir and bark will lead to increased watering requirements. Use of recycled local waste may lead to foreign items such as glass or wire in the compost making the use of gloves a good idea. Recycled waste may be very alkaline and unsuitable for seedlings, so you might consider a soil-based substrate. Mixing the compost with your garden soil will help plants adjust when transplanted.

Currently peat-free alternatives do not provide the same functionality as products containing peat and have additional production costs. You are paying more for an inferior product, but you are not damaging another landscape to improve your garden. It is a matter of choice and principle.

The government and the horticultural trade are committed to further research.

A Domestic Solution

For the domestic gardener the answer may lie back in the pre-1960s. The Victorian and inter-war gardeners did not have access to garden centres to buy multi-purpose compost, they made their own.

Some of the earliest research and standardisation was undertaken by John Innes. His mixes for JI Seed, and JI No1, No2 and No3 formulas are now universally known and can be a starting point for creating your own growing media. They are only a starting point only as the John Innes formulas also use peat.

A home-made growing media used for developing plants could start with:

7 parts loam

3 parts leaf mould or garden compost (replacing the peat specified by John Innes)

2 parts grit sand (not mortar sand, nor should it be beach sand)

For a growing media for seed it should start with:

2 parts loam

1 part leaf mould or garden compost

1 part grit sand

All parts by volume not weight.

I would not add fertiliser as a dried-base mixture as John Innes formula does, but would rely on using a liquid feed, no feed should be added to the seed mix. When making up either seed compost mix or a compost for developing plants, use half the recommended amount for seed compost and the full rate for plants. The liquid feed could be an organic tea such as nettle or comfrey.

The most difficult element is in sterilising the soil. Depending on the quantity required you can use a kitchen microwave, steam in a pressure cooker or place in the oven. Whichever technique you use the aim is to get the temperature up to 200C and maintain it for about 10 minutes.

For larger quantities, the Victorian gardeners would hold a metal sheet on bricks over a wood fire and cook the soil on the top of the sheet.

Sterilisation is more important for seed sowing media as it kills bacteria, viruses and weed seed. Until the soil is sterilised ensure cuts are covered, wash your hands if eating and ensure your tetanus is up-to-date.

There are as many formulas for home substrate as there are recipes for lemon cheesecake and you will have to alter your mix to match your soil and your experiences. The plants will tell you how well they are performing. For example a clay soil may warrant less loam mix and more sand. Your seed mix may need crushing and sieving.

If you can achieve the above you will have established a closed system and one that does not rely upon waste collection, external processing and transporting of materials from around the world. You have a sustainable process. It may also mean you have missed out on that trip to the garden centre and the obligatory coffee and scone!

What Are We at HWG Doing to Help

- We do not use peat as a soil conditioner
- We are increasing the quantity of plants we grow ourselves thus reducing plant miles
- We offer for sale the most up-to-date multipurpose composts including reduced peat and peat-free
- In keeping with our heritage values we are experimenting with the use of Victorian sterilising techniques
- We will be researching and trialling the use of our garden and home composting material as a peat substitute
- Within the garden we would like to establish a closed system of soil improvement and seed sowing media
- Within the plant nursery we will continue to monitor and support developments in the continued reduction of peat in growing media
- We pride ourselves in being a plant nursery not garden centre

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January 2014