The Magic of Life Butterfly House

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PEAT-FREE POTTING COMPOST

In our early years 2003-2005, we needed to find a reliable potting compost. Some of the brands on the market worked quite well such as Levingtons, other ones such John Innes gave poor results. All these commercial composts had one major drawback: they used peat. Digging up peat destroys precious bog habitat. The horticultural industry still says peat is the only medium that they can use for growing plants well. This is not true. All our plants grow and thrive in peat-free potting compost and have done for years. This is the story of how and why we developed our own peat-free compost.

Peat takes years to form. It comes from a special moss called *Sphagnum* that grows incrementally slowly in nutrient-poor bogs. This moss holds 25 times its own weight in rain water and it can create and maintain its own bogland habitat. Rare plants such as the three types of carnivorous sundews are found only in bogs along with many plants in the heather family. Birds such as the Hen Harrier Merlins and Owls use the habitat. Holding all those tonnes of water, peat bogs play a huge role in preventing rivers and towns from flooding down stream.

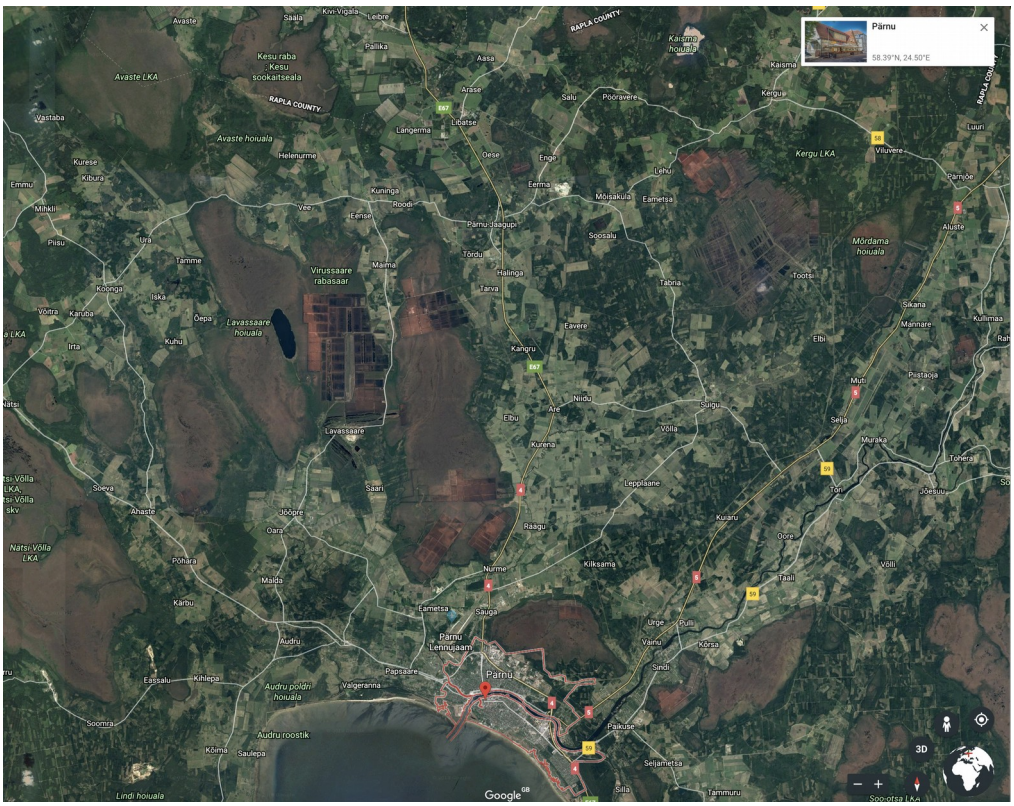
When I phoned the potting compost companies, they would say that they are just digging a deeper peat hole in Ireland and no more surface damage is occurring. This is not true. It's not just one hole they are digging, there are hundreds of extraction sites, some of which are of a scale hard to imagine. Some individual sites are so big that they can even be seen from outer space. Latvia and Estonia are especially badly hit and **these countries are pock-marked with scars.** It is ecocide on an industrial scale and financed by us. Like many environmental problems no one of us are especially guilty but *en masse* we are.

Think of it another way. Imagine the size of the mountain of peat if you emptied all the pots in garden centres in Europe and North America out in one place. And then imagine the mountain for next year.. Many plants are binned as soon as they are non-saleable. So just because we've run out of peat in our own country, it's ok to ruin somebody else's nature. It isn't.

This was why a main focus for us was to find an alternative to peat for growing all the breeding and show plants in. We started buying the early peat-free composts. Unfortunately these just plain didn't work – some of them even killed the plants due to lack of nutrients.

95% of peat extraction in Latvia is for us when we buy our plants in garden centres. Latvia and Estonia and pock-marked with these huge scars. We would like to encourage you to go on Google Earth for two minutes and see just how many of these sites there are, please don't just take our word for it..!

The individual rectangular peat cuts in this shot from Estonia below equal the size of one of the country's major cities, Parnu. The airport to the west of the city is dwarfed by them. Courtesy: Google Earth.



So we decided to set up our own experiments and start from the very beginning. We devised different mixes of potting compost made from non-peat sources using coir, leaf mould, bracken compost, sand, vermiculite, fertilising them with organic fertilisers e.g. fish, blood and bone or bone meal. Most of these didn't work and the plants became yellow and under-nourished quickly. Adding rotted compost from the compost heap, or horse manure, didn't work either in pots as it suffocated the roots. These work fine on soil beds. All in all, we did 200 experiments in three inch pots but few plants did well.

We happened to have a bag of wood chip from recycling unit which had some fertiliser added to it. This had just one plant in it and this plant started to thrive. It grew and grew and had strong dark green leaves. From this one plant, we swapped all our efforts into using pine bark and adding fertiliser. Like in the first experiments, without a lot of fertiliser the plants became weak and yellow. Then we came on a problem: we learnt that the fish in fish, blood and bone was not excess fish parts, the fish were being killed outright for this fertiliser. That put an end to the tests of our using organic fertiliser.

We carried on with the pine bark experiments this time using synthetic fertilisers. Must you use fertiliser? Yes in just wood chip your plant will go yellow and die without adding fertiliser. The high carbon means that the microorganisms have a free energy source and quickly use up the nutrients starving the plant. There is a also difference from using fertilisers in pots and the over-fertilising in farmer's fields leading to surplus run-off in rivers. These pine bark trials all worked well giving strong leaves and finally we settled on using the professional long-term fertiliser Osmocote at full recommend dose 5-6 grams per litre of potting mix. These granules last longer than the nutrients put in bought potting compost whether it is peat or peat-free. After a few months, the roots systems were a joy to see (please see photo below). Surprisingly, our tests showed that using conifer wood chip worked fine for all plants. We do avoid using larch and leylandii though due to the resins present. Otherwise any broadleaf wood chip makes an excellent base. It is important to have pure wood rather than lots of leaves mixed in as these rot too quickly and seriously affect the growth of the plant. Similarly wood chip from fresh growth of willow coppice does not work well.

A major advantage of this potting mix is that it is **alive**. It is full of micro-organisms, fungi, bacteria and invertebrates that help the plants by scavenging nutrients and even helping the plant's immune system. Many of the commercial composts are sterilised, the very worse thing you could do for growing mature plants. The well-drained nature of our peat-free compost brings the all important oxygen down to the root level. All plants grew well in the mix apart from *Citrus* and related shrubs.

The problems we found with this mix were firstly that the mix compacts down with time, sagging in the pot. This is easily compensated for by piling the mix up high above the rim of the pot in a cone. Secondly, it can be very free-draining meaning that you have to water it more frequently at first and plants are at risk of drying out. You can add 10% loam to make the mix heavier and less free-draining. The free-draining nature is of benefit for tropical plants as they often die in winter due to suffocation of the roots. After six to nine months, the potting compost can completely rot down resulting in lack of air in the compost. For ultra-heat requiring tropicals, we therefore put in 20%

perlite to prevent this. For bigger tub plants going outside and Citrus, we mix in some brown soil loam (10% sometimes more) from the garden. Mole hills are an excellent source of this loam.

Roots of passion plant *P. caerulea* and flowers of *P. incarnata* both grown in our peat-free potting mix - can't get healthier roots than those. This living compost is full of beneficial fungi and micro-organisms that support plant growth.

We have now grown hundreds of plants in pots using our peat-free potting mix. It is a myth maintained by the horticultural big players that plants don't grow well in peat-free soil. Even high nutrient-demanding shrubs such as the above Angels Trumpets flourish in it.

OUR PEAT-FREE POTTING MIX RECIPES

PEAT-FREE POTTING MIX – Result from our experiments. Over 200 small pots of plants were tested in all sorts of combination of potting mixes. Eventually we settled on the simplest mix that the plants grew well in.

The Wood chip can be recently chipped but should not have any leaves in. Broadleaf and Conifer chip such as Pine and Spruce work very well on all plants. Leyalandii and Larch chip should be avoided.

For OutsideTubs – Shrubs and Trees

90% WOOD CHIP OR BARK + 10% soil loam (brown garden soil without roots) – Mix in 5 grams per litre of 18 month Osmocote (from ebay) – Other brands don't last as long. The 18 month fertiliser takes a few month to start working.

For Houseplants

100% WOOD CHIP OR BARK – Mix in 5 grams per litre of 8-9 month Osmocote (from ebay).

For specialist tropical plants requiring winter heat

90% WOOD CHIP OR BARK + 10 % Perlite – Mix in 5 grams per litre of 8-9 month Osmocote

For Cuttings – Vermiculite, Coir (or Perlite)

These are all sterile and have no nutrients to reduce fungal problems. Perlite will need more care as it dries out faster. Stick cuttings down side of pots to decrease chance of rotting.

For Seeds - Vermiculite

Sterile and has no nutrients, important for reducing fungi problems.

To conclude: The advantages of mixing your own potting compost are that it is a living compost packed with beneficial micro-organisms. It is far cheaper than commercial compost bags, the nutrients last longer using Osmocote and you are not contributing to destroying other country's natural habitats.

PLEASE START ASKING YOUR GARDEN CENTRE AND SUPERMARKET IF THEY HAVE ANY PEAT-FREE GROWN PLANTS – IF WE ALL CREATE THE PRESSURE, THEY WILL CHANGE.