Professional growing media and what lies ahead for the nursery industry

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Our production locations

Germany, Lithuania, Ireland, Netherlands, Belgium — **Substrates**

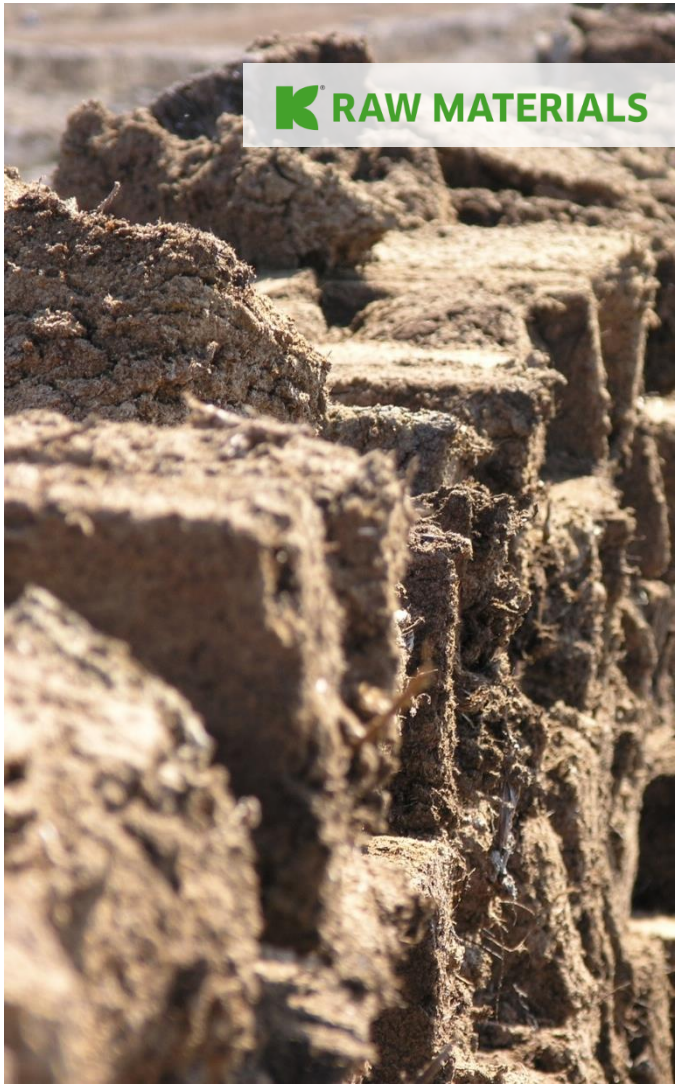
Germany, Latvia, Ireland, Lithuania, Netherlands, Belgium — **Raw Materials**

Latvia, Lithuania — **Bioenergy**

Our raw materials in figures

-11%	2,968,000 m³ Previous year: 3,678,000 m³	Raw peat
+8%	362,000 m³ Previous year: 291,000 m³	Wood fibre
+18 %	101.000 m³ Previous year: 92,000 m³	Green compost
+45 %	48,000 m³ Previous year: 36,0000 m³	Containermulch

Perlite, composted bark, coir



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Why peat remains the raw material of choice in professional horticulture:

Technical efficiency:

- Water holding capacity
- Aeration for roots
- Structural stability
- Nutrient buffering and availability
- Low starting pH / easy to set pH
- Consistent quality & reliability
- Safe & clean, free from herbicides, pesticides, pathogens, glass, faeces.

Commercial efficiency:

- Maximise yields, minimise other inputs
- Available locally
- Relatively low bulk density (transport cost)
- High volume from relatively small areas
- Stocks can be held for long time without significant loss of quality (once manged)

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Suitable constituents for peat free / reduced mixes

Coir, washed / buffered (RHP)	Perlite fine / coarse
Coir (Eco)	Vermiculite
Coco fibres	Pumice
Coco chips	Expanded clay, crushed
Wood fibres GreenFibre® medium / coarse / fine	Sand, washed
Green compost TerrAktiv®	Clay granules, milled clay
Pine bark (fine / medium / coarse)	
Composted bark (fine, medium)	

Wood Fibre - the backbone for peat reduction

Significant advantages of GreenFibre

- Supports healthy and quick plant development
- Reduces transport costs due to low weight
- Improves drainage
- Stable nitrogen management for ensuring an easy feeding regime of crops
- Increases air capacity and ensures long term structural stability
- RHP and FSC certified ; Approved to be used in organic substrates according (EC) Regulation no. 834/2007 and implementing regulation (EC) No. 889/2008, annex 1, for organic crop production

GreenFibre

In Chaenomeles

Growing results – physical properties

Substrate	Air capacity (pF 1.0)
Substrate without GreenFibre (Base 100 % peat, 0 – 25 mm)	13 Vol.-%
Substrate with GreenFibre (Base 75 % peat, 0 – 25 mm + 25 % GreenFibre coarse)	22 Vol-%
Substrate with GreenFibre (Base 65 % peat, 0 – 25 mm + 35 % GreenFibre coarse)	30 Vol.-%

Root development in container cultivation

Without GreenFibre

With 25 % GreenFibre

With 35 % GreenFibre

Coir

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Sourced from India and Sri Lanka

- More than 25 years of experience using it
- Certified to the SA8000 (ethically sourced)
- Washed or buffered to adjust its chemical properties allow the safe use in plant cultivation

Advantages

- Defined, constant quality
- Medium pH of 5.0 – 5.5
- Transport costs minimised by rewetting at point of substrate manufacture
- A true replacement for peat in most crops
- Evident for higher grades of peat reduction

Challenges

- Availability, transport, price
- Ethical concerns; Some growers now asking for ‘peat & coir free’ product
- Impact on water quality in country of origin

Green Compost

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TerrAktiv (green compost)

- Production began in 1991
- Market leader in organic substrates
- Certified by Ecocert & RHP
- In Ireland – Bark & Willow (2021)

Advantages

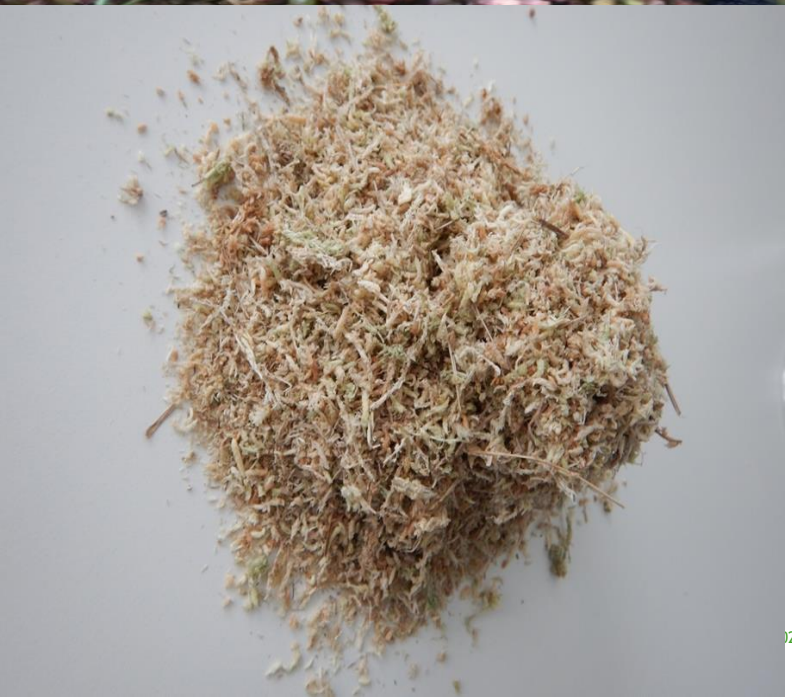
- Biologically active
- Suppresses root diseases
- Increases shelf life of potted herbs
- A slow releasing source of nutrients
- High buffering effect on nutrients
- Improves the nitrogen release of organic fertilisers

Challenges

- Heavy 400kg/m^3 Vs 280kg/m^3 for Irish peat
- Cost and availability

New constituents - what's on the radar?

Tested constituent	Limitation
Rice husks	Availability, price, weed issues, transport (LCA) growth issues due to phenols (e.g. Begonia)
Rockwool	Price, energy intense (LCA)
Digestates	Inhomogeneity, human pathogen issues, local availability, salinity, N-fixation
Biochar	Limited availability, price, weight, energy intense (LCA)
Plant fibres (e.g. flax, reed, Silver grass, hemp)	Still limited availability, N-fixation issues, weed issues,
Sphagnum moss	Harvesting technique, limited availability, price, weeds
Xylit (young brown coal)	Limited availability, weight, not sustainable!
Cork granules	Limited availability, very expensive, specialist use crops
Biobased polymers	Price, technology



Sphagnum Moss

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Grown on KD's own Sphagnum Farm

- Project began in 2015
- Conducted in conjunction with University of Hannover
- Monitored changes over time in biodiversity and GHG emissions

Advantages

- Growing trials have proven that Sphagnum is the best available peat alternative
- Performs similar to white peat moss

Challenges

- Weed contamination
- Limited availability of areas to grow
- Inoculation material & permission for harvesting difficult to obtain
- Very low productivity (slow growing)
- Machines to harvest
- Currently uneconomic (4x perlite)
- Keeping fields sufficiently wet

The Ship from Latvia..

In September we brought in our first ship of peat from Latvia. It contained almost 200 truck loads of peat.

- On the basis of the current allocation of bark from our supplier it would take us 2.5 years to build the equivalent volume of bark
- At current output level of woodfibre it would take us almost 5 months to make the equivalent amount of GreenFibre
- To purchase the equivalent volume of Coir would cost almost 3x as much as the Baltic peat
- To collect the same volume of peat on the bogs beside our factory, it would take 10 days and cost about 1/4th of price!

Baltic Peat Vs Irish Peat

Baltic Peat (generally):

- Lighter in colour
- Lighter in weight – increased volume per load
- Softer structure – breaks down more easily
- Less sphagnum, more other mosses & liverworts
- More readily biodegradable, more CO2 emitted
- More shrinkage in pots
- Contains more wood / sticks
- Water uptake inferior to Irish peat
- It is safe, clean, and consistent
- It is available!
- If the availability of Irish peat is restricted further then Baltic content will have to increase

Risk areas when working peat free

1. Raw material availability / costs, weight	
2. Irrigation management	More frequent irrigation, monitoring
3. Higher pH-value	Risks for induced TE deficiency, ericaceous plants ?
4. Nitrogen/nutrient balance	Higher N-fixation to be considered, more feed more often, CRF release quicker?
5. Plant health	Increased attractiveness for pests e.g. Sciarid fly
6. Effect of varieties / selection	Test new varieties prior use
7. Raw material inhomogeneity	More variations in crops
8. Limitations for propagation substrates	
9. Limitation for ericaceous crops	Higher pH value and buffering issues
10. Not overnight, minimum 2 years trials, Peat reduction step by step, continuous sampling, monitoring, consulting	

Thank you for your attention

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