An industry perspective on wise use of peatlands and peat

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Agenda

01 Why it is as it is
02 The peat and growing media industry
03 Why Sphagnum Farming?
04 Footprints and holistic views
05 Conclusions
01
Why it is as it is
Wise use centuries ago

An example: Germany

Development of mires began centuries ago and was **politically enforced** until 1981. Most peatlands were drained by then (Marshall Plan, Emsland Plan).

The objective was peatland usage for agriculture and settlements. Mires were wastelands.
Wise Use 200 years ago
Georg Klasmann in 1953 received the German Medal of Honor (Bundesverdienstkreuz) for efficient peatland drainage and development.
02
The peat and growing media industry
Definitions

Growing media (GM):

*Material other than soil in situ, in which plants are grown.*

Growing media constituents (GMC):

*Materials which are suitable as volume-building ingredients of growing media.*
Our Customers

90% of our GM are applied in professional horticulture
40% are used for growing vegetables and fruits

Vegetables & Fruits  Floriculture  Trees and shrubs  Landscaping
Uses of peatlands in the world

- Undisturbed peatlands 86%
- Growing media 0.05%
- Energy 0.05%
- Drained tropical peatlands 3%
- Forestry 4%
- Agriculture 7%
Growing media constituents

Organic
- Peat
- Coconut coir
- Wood fibers
- Green compost
- Bark
- Rice hulls
- Sphagnum

Inorganic
- Perlite
- Expanded clay
- Pumice
- Vermiculite
- Sand

Others
- Spent GM
- Peanut shells
- Brewery residues
- Cork
- Cocoa shells
- Biochars
- Digestate compost
GMC used in EU 16 in 2013 (Total = 34.6 M m³)

- Peat (bog and fen): 75.1%
- Other organics: 10.9%
- Composts: 7.9%
- Mineral materials: 4.6%
- Pre-shaped: 1.6%
Wise use of peat in horticulture
GMC used in EU 16 in 2013 (Total = 34.6 M m³)

- Professional market
- Hobby market
GMC types used in EU 16 in 2013 (Total = 34.6 M m³)

- Peat
- Other organics
- Composts
- Minerals materials
- Pre-shaped

(PRO, HOBBY)
GMC used in UK in 2013 (Total = 2.65 M m³)
GMC used in NL in 2013 (Total = 4 M m³ w.-o. pre-shaped)
03

Why *Sphagnum* Farming?
Living *Sphagnum* moss
Dried *SPHAGNUM MOSS* (< 10 mm) as a GMC
Why *Sphagnum* Farming? (1/2)

**Peat availability**

Decrease of peat reserves in Germany

**GHG, eNGOs, Politics**

Peat extraction hampered via policies

**Other constituents**

Search for materials without compromising product quality
Why *Sphagnum* Farming? (2/2)

**After-use**
Is SF on (strongly decomposed) peat feasible after peat extraction?

**Biodiversity**
Possibility to turn degraded peatland into viable peatland to reduce GHG-emissions

**Funding**
Gov. of Lower Saxony supports research for peat alternatives
Project location

In the Federal State of Lower Saxony, Germany
Partners

Title

„Extensive cultivation of peat moss in Lower Saxony as a land use subsequent to black peat extraction and its potential...

...for the sustainable production of a growing media constituent“

...for climate change mitigation and biodiversity“
Our project in short

- First large-scale (10 ha) SF trial on strongly decomposed raised bog peat
- Costs (2015 to 2018): > 1.37 M €
  - € 620 K - Min. of Food, Agriculture and Consumer Protection
  - € 350 K - German Fed. Env. Foundation
  - € 400 K - Klasmann-Deilmann
- 5 ha *Sphagnum* Bank and 5 ha production site
- Testing of diff. irrigation and drainage systems, coverages and *Sphagnum* species
Main 3 project questions

Is peat replacement with cultivated peat moss profitable?

Are GHG emissions on SF sites lower than on peatlands used in other ways?

Can SF create habitats for endangered species?
Project implementation (major steps)

*Sphagnum* donor site

Harvesting donor peat moss

Distributing peat moss

Fleece coverage

Straw vs. Fleece coverage

Peat moss growth July 2016
Opportunities

- Provide a suitable GMC
- Deliver a long-term perspective for the GM industry
- Safeguard jobs in economically weaker regions
- Optimize the colonization of former peat extraction sites with Sphagnum
- Enhance the ecological value of peatlands currently used for agriculture
- Mitigate GHG emissions

Challenges

- Shortage of realistic SF sites
- Shortage of donar peat moss sites for inoculation
- Hydro management is critical
- Productivity, functionality and selection of Sphagnum species
- Weeds and weed seeds
- Sphagnicolous fungi (Sphagnurus paluster) and other fungi
- Future competition with other GMC
- Profitability
04

Footprints and holistic views
Stakeholders and politics must have a common basis for Sustainable Development and Decision Making

“Protection of the environment is only feasible if politics consider economic and social aspects at the same time. If any pillar is weak then the whole system of Sustainable Development is not sustainable”.

(UN Conference on Environment and Development in Rio in 1992)
Climate Change impact of some GM constituents

Climate change [kg CO$_2$ eq./m$^3$ of constituent] - Do not compare constituents that do not have the same function

- End-of-life
- Distribution
- Cradle to gate
- Impacts incl. distribution

Chart showing climate change impact for various GM constituents.
Impact of some GM constituents on Human Health

Human health [DALY/m³ of constituent] - Do not compare constituents that do not have same function

- Distribution
- Cradle to gate
- Impacts incl. distribution

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<td>Wood fibres</td>
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Consider that .......

...all growing media and growing media constituents have an environmental impact!
The holistic view on all growing media constituents

Growing medium properties
- Physical
- Chemical
- Biological
- Quality consistency

Economic aspects
- Availability
- Distance / transport
- Price
- Plant requirements
- Cultivation techniques

Social criteria
- Employment
- Kind of labor force
- Community development
- Rural economy

Environmental impacts
- Climate change
- Ecosystem quality
- Human health
- Resources use

Schmielewski 2013
A Dutch governmental initiative to secure the supply of responsibly produced peat for horticulture which is based on the SRPM.

RPP is gaining importance among stakeholders in Europe.
responsible produced peat

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*a: in the very long term: only*
Conclusions
• Industry would be happy to have 'the' alternative

• A number of materials other than peat are being used, but peat will remain the main constituent

• *Sphagnum* can be used but will remain a niche product and will have to compete with other materials

• Policy support is needed to promote SF

• Policy support and funding are needed to promote the recycling of organic materials (municipal green waste, residual wood from state forests) / EU Circular Economy Package

• Alternative after-uses after extraction needed (paludiculture); a governmental concept is needed to obtain needed areas
Thank you for your attention!