SUBSTRATES

The use of peat in commercial horticulture

The essentials

1913

we make it grow

Product Carbon Footprint for selected substrates (2016)

Substrate	Recipe-No.	Type	Emissions Cradle to gate	Emissions Cradle to grave
Base Substrate 1 fine	70413	White peat substrate	51.3	198.9
Potgrond P	70002	Black peat substrate	16.8	236.0
Bio Tray Substrate	70062	Black peat / white peat blend with green compost	55.4	195.0
Seedling Substrate	70080	Black peat / white peat blend with coco pith	39.3	171.8
BP Substrate 2 fine / medium + GreenFibre	70698	Black peat / white peat blend with wood fibre	26.7	158.7

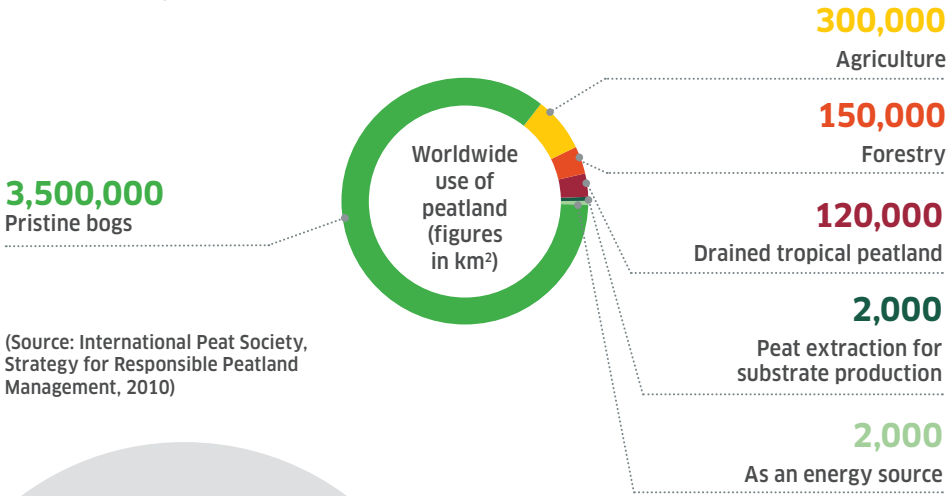
Data in kg CO_2e/m^3

Peatlands and their use

Peat and peatlands worldwide

Worldwide, there are around 4,074,000 km² of peatland, 86 % of which is in a natural state.

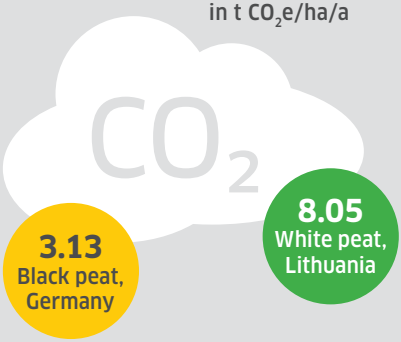
- Just under 10 % of peatland has been drained in recent decades, especially for agricultural or forestry use.
- The resulting peat extraction areas cover some 2,000 km² (= 0.05 % of the world's total area of peatlands).



(Source: International Peat Society, Strategy for Responsible Peatland Management, 2010)

Emissions from peat extraction

Average emissions
in t CO_2e/ha/a



Between 2015 and 2017, we conducted a scientific study in both Germany and Lithuania, involving the measurement of actual emissions (CO_2e) from peat extraction. Values previously used had been merely deduced as opposed to measured. The investigation indicated that emissions from peat extraction are lower than previously estimated. Peat, therefore, decomposes more slowly than reviously assumed.

Measures following cessation of peat extraction

When extraction of the raw material has come to an end, the areas in question are prepared in line with requirements. Sites under restoration are made permanently available as biotopes for conservation and climate protection purposes. Klasmann-Deilmann has so far re-wetted, afforested or made available for agriculture 8,442 hectares.

8,442 ha
All forms of after-use combined

194 ha
Afforestation

4,208 ha
Re-wetting

4,040 ha
Agricultural after-use

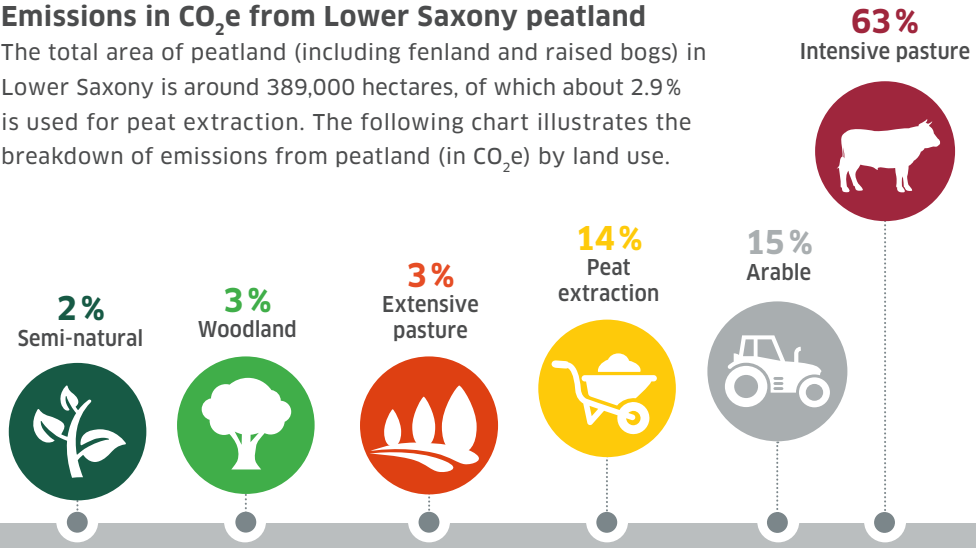
Peatlands in Germany are protected

In Germany, peat extraction was expressly desired politically even into the 1970s. The policy was to take land lying unused and reclaim it for residential and agricultural purposes. Since then, peat extraction has taken place only on already drained sites, some of them previously used as farmland.

- Pristine bogs are designated protection areas and are left untouched in Germany and elsewhere.
- Only around 2.9% of (former) peatland in Lower Saxony is used for peat extraction.
- A substantial amount of former peatland is subject to agricultural use.
- Klasmann-Deilmann's land management and raw-materials extraction practices adhere to the Code of Practice of Growing Media Europe AISBL (formerly the European Peat and Growing Media Association, EPAGMA).
- Klasmann-Deilmann is managing an increasing number of extraction sites in compliance with the guidelines of Responsibly Produced Peat (RPP), the European certification system that stipulates binding and verifiable criteria for these activities. More than 75% of the company's raw materials are now sourced from RPP-certified commercial peat fields.

Emissions in CO_2e from Lower Saxony peatland

The total area of peatland (including fenland and raised bogs) in Lower Saxony is around 389,000 hectares, of which about 2.9 % is used for peat extraction. The following chart illustrates the breakdown of emissions from peatland (in CO_2e) by land use.



Greenhouse gas emissions from different peatland uses

58.88 t CO_2e/m^3
(2016)

Food sector

We wish, in future years, to step up our supplies to the fruit- and vegetable-growing sector. To document our progress here, we compare sales figures achieved for this area with total sales of growing media (in m^3 in both cases).

43.9 %
(2017)

Emissions

As well as reducing our overall emissions, we are especially keen to reduce emission levels per product unit. In this KPI, therefore, we calculate the ratio between our corporate group's total emissions (in t CO_2e) and our total production volume (in m^3).

Use of peat in growing media

Peat is the most effective substrate component

The way growing media 'work' must reflect industrial standards, as modern commercial horticulture is a high-tech sector. From today's perspective, there are no comprehensive alternatives to peat that would ensure this excellence is maintained without compromising on quality.

- Peat combines the properties that commercial gardeners expect from a growing medium.
- Peat-based substrates deliver unique reliability in cultivating a wide range of crops.
- Peat-based growing media of consistently high quality can be continuously produced and supplied.
- After processing, the different types of peat have physical, chemical and biological properties that, overall, are unmatched by any other raw material.
- In terms of plant cultivation, raw materials such as wood fibre, green compost and coco pith are a valuable complement to peat.
- Only in combination with peat do these raw materials achieve the desired horticultural effect.
- Growing media without peat are less reliable in terms of crop cultivation.
- Based on the current situation, doing without peat in growing media would lead to a substrate supply gap, as alternative substrate constituents are not available in sufficient quantities.
- Klasmann-Deilmann operates three in-house composting units and several wood fibre facilities at which quality-certified alternative substrate constituents are produced.
- By 2020, Klasmann-Deilmann aims to increase the proportion of alternative substrate constituents to 15 % of its annual substrate production.

Our annual production of substrate constituents

> 200,000 m³
Wood Fibre

~ 100,000 m³
Green Compost

~ 3,000,000 m³
Peat Raw Materials

> 3,700,000 m³
Production of Growing Media and Potting Soils

Tree nurseries: a case study

Growing media for the tree nursery sector promote the growth of plants that, in many cases, are in pots for several years or are planted out. These plants capture CO_2 during the growth process and thus indirectly help absorb greenhouse gases.
Examplary calculation for copper beech:

- Age 4 years, height 120 cm, width 50 cm
- CO_2 captured per plant: 432 g
- Each cubic metre of substrate is sufficient for 200 plants grown in 5 l containers
- In 10 years, 200 plants capture some 217 kg of CO_2, assuming absorption levels remain unchanged; in actual fact, increasing capture can be assumed, so that the positive impact is even greater
- Per cubic metre of substrate, around 86 kg of CO_2 are indirectly captured by the plants
- CO_2 equivalent to that released by the use of a ‘container substrate’ (recipe no. 250) will have been ‘recaptured’ after no more than 10 years

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we make it grow

Klasmann-Deilmann GmbH | Georg-Klasmann-Straße 2–10 | 49744 Geeste | Germany
+49 5937 310 | +49 5937 31279 | info@klasmann-deilmann.com | www.klasmann-deilmann.com