IPS Rotterdam 2018:

Rapid & Reliable Restoration of Sphagnum using Micropropagated Sphagnum as BeadaHumok™

Dr. Neal Wright,
Micropropagation Services

Micropropagating Sphagnum - since 2005
Micropropagation

We are Young Plant Propagators using plant tissue culture for 30 years.

Growing plants on sterile nutrient culture medium.
Why Micropropagate Sphagnum

For many species spores unavailable
- Micropropagation the only way to propagate large quantities.
  - Tiny starting quantity
    - No donor site damage
  - Clean material

S. capillifolium  S. palustre  S. subnitens
S. cuspidatum  S. fimbriatum
S. tenellum  S. fallax
S. papillosum
Micropropagation of Sphagnum

- **Vegetative Micropropagation:**
  - Any species
  - Any Clone
    - Specific origin
    - Selected provenance clones
    - Local origin

Developed by Micropropagation Services over 12+ years
New BeadaMoss®
Production Facilities
East Midlands (England)

In full production 2018
Micropropagated - *Sphagnum*

- **BeadaMoss®**
  - Easy to handle

- **BeadaGel™**
  - Liquid Gel

- **BeadaHumok™**
  - Grown in plugs of single or mixed species high density clump of plants
  - *Uniquely developed by Micropropagation Services*
  - Instant results
  - Easy planting
    - High success
    - Rapid growth

[Website: www.beadamoss.co.uk]
In production

Over 1,200,000 supplied in 2017/18
Robust, hardy Sphagnum plugs supplied in easy to plant rolls (of 20)
Out-competes grasses

- Molinia or
- Cotton grass (Eriophorum)

- Sphagnum uses grasses as support structure
Drought tolerant
Any Species

- Mixed within plug:
  or
- Single species

- Many origins available:
- UK, German, Irish, Swedish and many other
Micropropagation of Sphagnum

- Pure Species or Blend of species
- Known Local Origins UK & Europe

S. angustifolium
S. capillifolium
S. cuspidatum
S. denticulatum
S. fallax
S. fimbriatum
S. fuscum
S. imbricatum (austinii)
S. inundatum
S. magellanicum
S. palustre
S. papillosum
S. pulchrum
S. rubellum
S. rusowii
S. squarrosum
S. subnitens
S. tenellum

Thanks to all who helped us collect them.
Trial sites – mentioned today

- West Coast Ireland
- Yorkshire Dales
- Peak District (Kinder Scout)
- Manchester Mosslands (Low)
- Cors Fochno/Borth (Wales - Low)
- Lower Saxony, Germany

www.beadamoss.co.uk
Peak District - Kinder Scout

Planted March 2015
2% cover

July 2015
5% cover

Mar 2016
10% cover

June 2018
97% cover

Photos courtesy Moors for the Future
Kinder Scout

Beadahumok™ v Wild Harvested

% cover

% increase in area

2015 2016 2017 2018

Beadahumok™ on undulating ground Wild Harvested
Manchester Mosslands (lowland)

- BeadaHumok™ planted at high density produced a complete cover in approx. 2 years
Yorkshire Dales

• One year after planting
  – Grown from 4 cm to 11 cm diameter
Cors Fochno / Borth
at 5 months

Beadahumok™
Grown 285%

Transplants
Grown 37%

S. papillosum, S. capillifolium, S. palustre

www.beadamoss.co.uk
Germany (Lowland)

- Planted spring
- Photos Autumn
- 6 months growing
- 1 Euro!
Germany (Lower Saxony)

Growing outside a well-known peat producers new office!

10 weeks after planting
West coast Ireland (Lowland)

• After just 5 months
• Grown from 4 cm to over 12 cm
Planting Density

• Restoration:
  – Dependant on:
    • Finance available
    • Speed of Sphagnum cover required
  – Varies from
    • 1 in $1\, m^2 = 10,000$/Ha
    • 1 in $8\, m^2 = 1250$/Ha

– 4 months growth!
Cost

• €uro 0.52 (current)
• Cost per Ha:

1 per $m^2 = €665/Ha  to  1 per m$^2 = €5300/Ha
BeadaHumok™ The best product for restoration – grows well in all conditions

Out-competes Molinia

Dry conditions
After just 3½ months

Wet conditions
Potential for mechanical planting

In lowland Restoration or Sphagnum Farming potential

Examining adapting plug planting machines
Large scale – restoration for instant result

Sustainable source of *Sphagnum*:

- No donor site damage
- No transfer of contaminants
- Clean - micropropagated in lab
- Weed free

Thanks to:

Prof Simon Caporn (Manchester Metropolitan University, MMU)
Anna Keightley (MMU)
Richard Lindsay (University of East London)
Matt Buckler (Moors for the Future)
Chris Miller (Lancashire Wildlife Trust)
Mike Bailey (Natural resources Wales)
Tim Thom (Yorkshire Peat Partnership)
Jenny Neff (EACS)
Jan Koebbing (Klasmann-Deilmann)