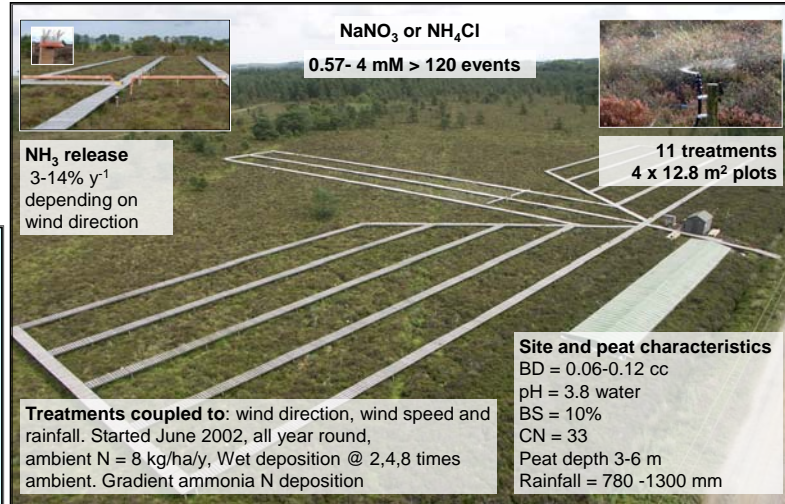


Ammonia >> ammonium ~ nitrate

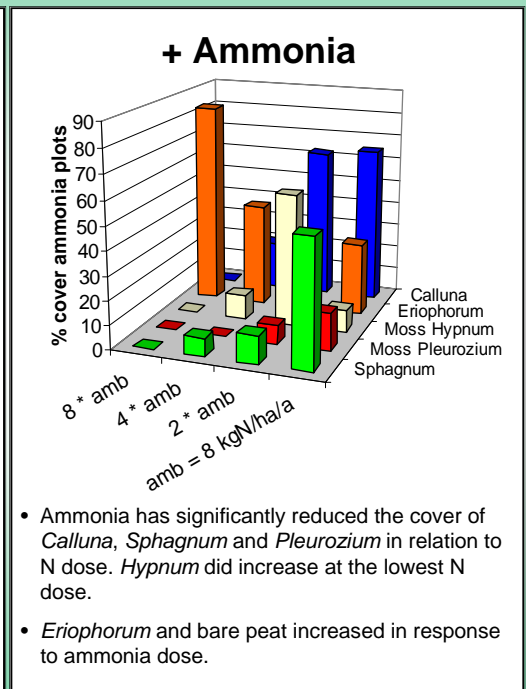
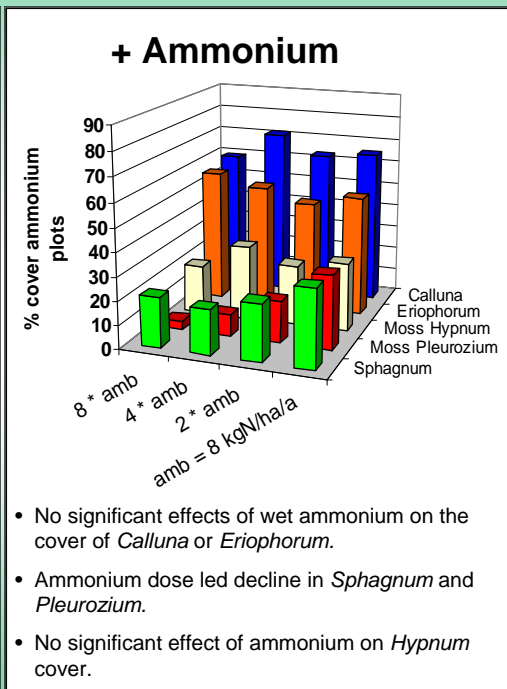
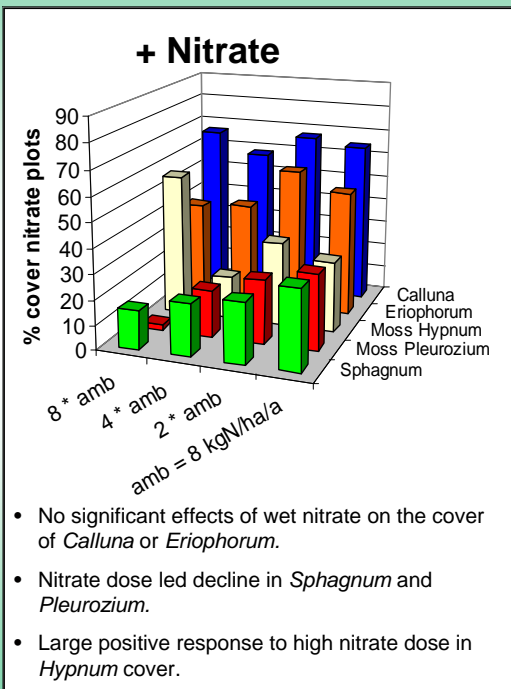
LJ Sheppard, ID Leith, SK Kivimaki and J Gaiawyn

CEH Edinburgh, Bush Estate, Penicuik EH26 0QB Scotland

Unique automated field facility, Whim bog, in the Scottish Borders manipulating dry, through free air release, and wet (sprayers) N deposition (ammonia, ammonium, nitrate) to compare the effects of dry versus wet and reduced versus oxidised N on an ombrotrophic bog with low ambient deposition 8 kg N ha⁻¹ a⁻¹.

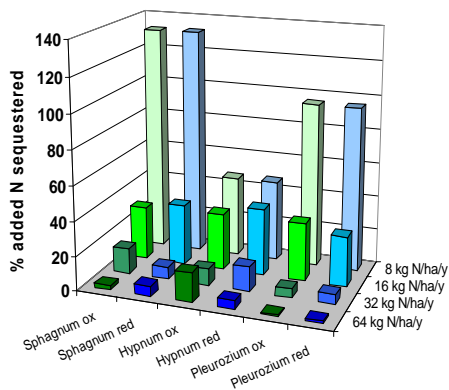


Percent cover was assessed in two 2x1 m² and in the forty four 12.8 m wet plots, in October 2009, for *Calluna*, *Eriophorum vaginatum*, the mosses *Hypnum jutlandicum* and *Pleurozium schreberi* and the hummock forming *Sphagnum capillifolium* in response to ambient (8), 16, 32 and 64 kg N ha⁻¹ a⁻¹ as wet nitrate, wet ammonium and dry ammonia gas.



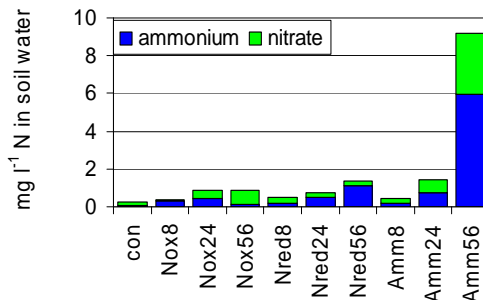
Effects of N form are not significant in wet deposition re growth and cover.

N sequestered in mosses

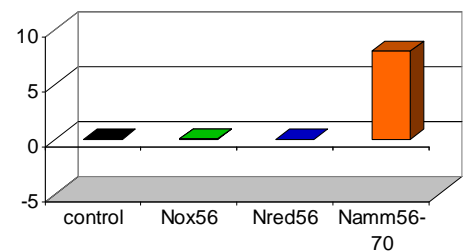


Mosses *Sphagnum* > *Pleurozium* > *Hypnum* can 'sequester' N from precipitation. But these mosses appear to be saturated @ >8 kg N ha⁻¹a⁻¹.

N in soil water



Median N₂O-N kg N/ha/y flux



Ammonia > 56 kg N ha⁻¹ a⁻¹ has destroyed the vegetation.

- N is no longer sequestered by the vegetation.
 - N leaks into soil water
 - N is lost as the greenhouse gas N₂O (14% of NH₃-N deposited)
- Per unit N deposited Ammonia is by far the most damaging N form affecting species and the ecosystem services they perform.**