FACTSHEET

Bare Peat Re-vegetation

The moorland areas of the South Pennines have very low pH and nutrient levels. They are generally 500–600m in altitude with considerable wind exposure, very low average winter temperatures and high annual rainfall. Furthermore, unsheltered bare soil is a very harsh microclimate, and is vulnerable to erosion. Under these conditions, moorland plants cannot usually re-colonise bare peat.

The most important factor in re-vegetating the moors is the initial stabilisation of the peat. This process gives a period of breathing space that enables the typical moorland vegetation to come back. Initial stabilisation and a tolerable microclimate for seedlings are provided by a layer of chopped heather brash or geojute. Heather is sourced from moorland sites within the South Pennine Moors Special Area of Conservation and undergoes Moors for the Future's 'Passport' system to maintain biosecurity (*see the Heather Cutting Factsheet*). A nurse crop comprising fast-growing agricultural and amenity grasses is then spread to further stabilise the soil and shelter the moorland species to be introduced. The nurse crop is unlikely to grow under the low nutrient, low pH conditions so it is also necessary to apply lime and fertiliser.

Dwarf shrubs (ling heather and cross-leaved heath) and wavy hair-grass (*Deschampsia flexuosa*) are spread at the same time as the nurse crop. Heather seeds will also be present within the brash if it is harvested at the right time of year. Once the nurse crop has become established, it will have provided the dwarf shrubs with the conditions they need to start growing: soil stability and shelter for seedlings. Other moorland plants and mosses will also be able to colonise the site from the surrounding area. The nurse crop is maintained through further lime and fertiliser treatments for two or three years, after which it will survive for another one or two years before dying. By this time, however, a community of moorland dwarf shrubs, grasses, mosses and other species will be established. Re-vegetation not only provides obvious benefits in terms of habitat creation and erosion prevention, but also raises the water table and slows the flow of water off the hill.

MATERIALS AND APPLICATION RATES

We assess the requirements of each site individually. However, for most sites the following materials are applied. A calcium carbonate based granulated lime that dissipates readily in water, with a neutralising equivalent of one tonne of ground limestone (total neutralising value of 50–55%) per hectare of bare peat, is applied first to raise the pH sufficiently for the nurse crop to grow (but no further, so as not to harm moorland species).

The seed mix is then applied, as follows (three varieties of perennial rye grass are used):

- Sheep's fescues (*Festuca ovina* and *F. longifolia*) 24.0kg/Ha
- Perennial rye grass (*Lolium perenne*) 8.0kg/Ha, 7.0kg/Ha and 6.0kg/Ha
- Browntop bentgrass (*Agrostis castellana*) 4.0kg/Ha
- Wavy hair-grass (*Deschampsia flexuosa*) 1.0kg/Ha
- Ling heather (*Calluna vulgaris*) 0.32kg/Ha
- Cross-leaved heath (*Erica tetralix*) 0.03kg/Ha

An initial treatment of fertiliser is applied ideally six weeks after the lime application and should supply the following levels of nutrients:

- Nitrogen — 40kg/Ha
- Phosphate — 60–120kg/Ha of P_2O_5
- Potassium — Between 60kg/Ha and 120kg/Ha of K_2O but ideally 60kg/Ha

Lime (as above) plus a maintenance fertiliser treatment are applied in year 2 (and possibly year 3) with the following levels of nutrients in the fertiliser:

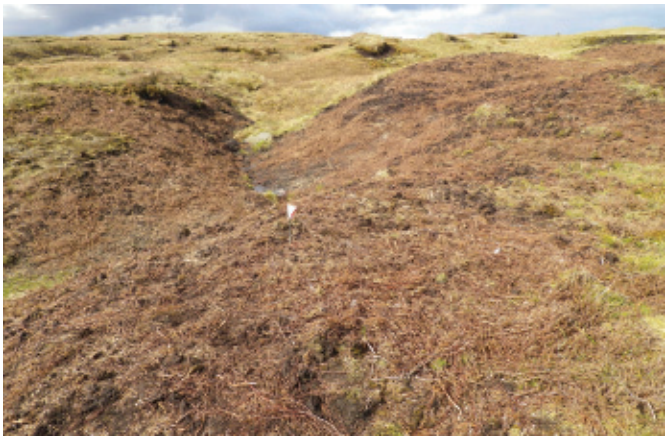
- Nitrogen — 40kg/Ha
- Phosphate — 60kg/Ha of P_2O_5
- Potassium — Between 60kg/Ha and 120kg/Ha of K_2O but ideally 60kg/Ha

CASE STUDY: BLEAKLOW

In April 2012 re-vegetation work was carried out on an area of Bleaklow south of the summit cairn at Bleaklow Head. The area consisted of a mix of bare peat (mostly on slopes and domes) and intact vegetation. Dumpy bags (one-tonne builders' bags) of chopped heather brash were airlifted onto site and spread by hand, after which lime, seed and initial fertiliser were applied. Follow-up treatments of lime and maintenance fertiliser were applied in subsequent years.

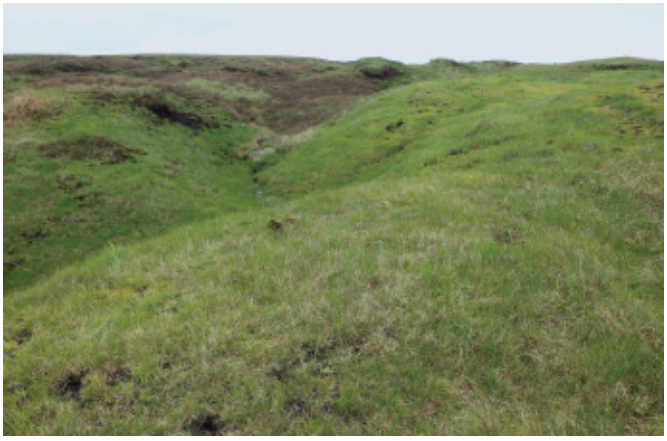
Figure 1, below, shows a sequence of images illustrating the effects of this treatment. Field notes were also taken on the extent and composition of the vegetation cover.

Figure 1: Fixed point images to show re-vegetation of bare peat on Bleaklow

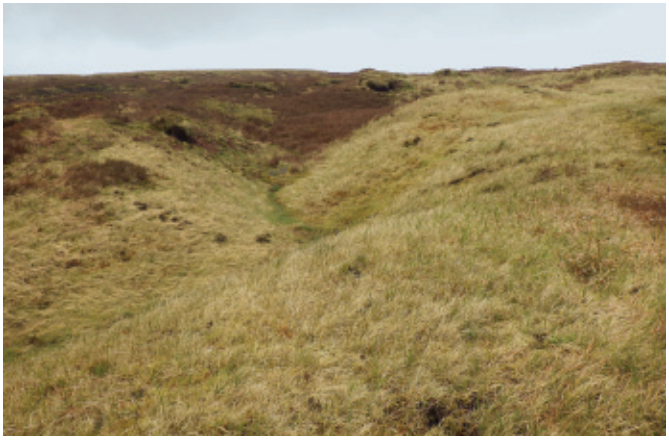


April 2012: Immediately after heather brash application

May 2013



April 2014



May 2015

After one year, in May 2013, approximately 90% of the bare peat had been covered by nurse crop grass. By April 2014 this had increased to 95% cover, with wavy hair-grass starting to take over, and mosses making an appearance. This moss cover had increased to 90% by 2015 underneath the thick, healthy grass, at which time shoots of heather were making an appearance. The nurse crop will start to die (as planned) now that the lime and fertiliser treatments have been halted, having done its job by providing a suitable stable microclimate in which the initial community of moorland plants and mosses could become established. In due course, other moorland species such as bilberry (*Vaccinium myrtillus*), crowberry (*Empetrum nigrum*) and common cotton grass (*Eriophorum angustifolium*) should colonise the site to produce a diverse and healthy moorland community.

MoorLIFE2020

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www.moorsforthefuture.org.uk

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