

Field Lab Notes: Management Essentials

Managing Rushes Without Chemicals



Grassland management essentials: part 2

This is the second of a two-part note on the essentials of rush management. The previous part looked at physical aspects of soil management: drainage and soil structure. This part looks at soil chemistry.

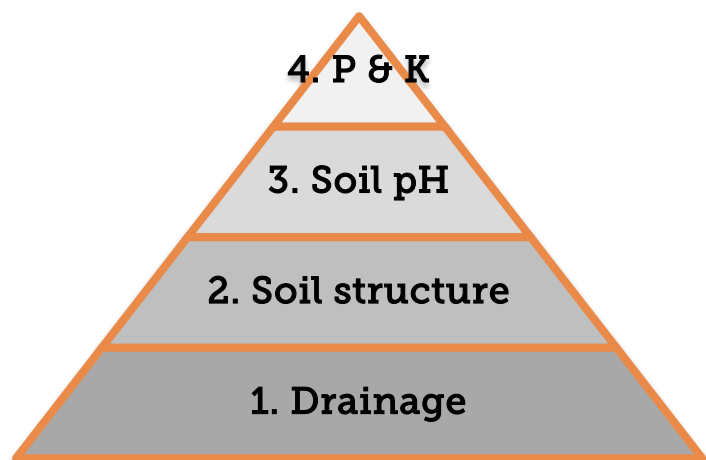
Nutrients and pH: soil chemistry management

The Managing Rushes without Chemicals Field Lab is running over several locations throughout Scotland to find out the best ways that rushes can be managed. It has the following aims:

- **Improve productivity** (carry more livestock and produce more silage or hay)
- **Invest in grassland for long-term production** (reduce the costs associated with reseeding and short-term weed control measures)
- **Improve wading bird habitat where appropriate** (improve biodiversity, and potentially provide an additional source of income as part of an agri-environmental scheme)

The essentials

Our many field lab meetings, held at several sites throughout Scotland, have shown us that the essentials of rush management are the same as the essentials of good grassland management: drainage, soil structure, soil pH, and the soil nutrients phosphate and potash.



These essentials must all be assessed, and if they are not right, they must be addressed. Sustainable rush management is more achievable when this has been done. The diagram (left) illustrates this as a pyramid: where strong foundations are essential for the next stages to be effective.

Addressing the essentials can be costly and time consuming, so more productive fields should be prioritised. Rushes can be managed, to an extent, without fully addressing all these things, and with topping and grazing. But this can only reduce, rather than eliminate, them.

3. Soil pH

Correct soil sampling and analysis is an incredibly important part of grassland management. A 'routine' soil analysis result will tell you what the soil pH is, as well as the phosphate (P), potash (K), and magnesium (Mg) status of the soil. Different labs carry out different types of analysis. It is important to use an accredited Scottish lab to analyse Scottish soils, to give you the best information to manage your soil. It is also important that the lab takes into account soil texture to give an accurate lime recommendation, as this will vary depending on soil type.

If you have permanent grassland, then for most soils a pH of 5.8 or above is fine. If you have a pure peat soil, then a pH of 5.2 or above is fine. If your field is in an arable rotation then the target pH will be higher. The SRUC Technical Note TN656 has a table of target pHs for different soil types.



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If your soil pH is very low then be aware that 7.5 t/ha is the maximum single lime application rate for permanent grassland. A higher lime spreading requirement should be split over several years. Ideally soil should be limed 'little and often', as a large swing in the pH isn't good for the health of the soil. You can achieve this with a regular programme of soil testing and analysis, and lime spreading on the basis of the results. If the Mg status of the soil is low, you should think about using 'maglime'. If it is high, you should use ground limestone.

One of the farms involved in the field lab used granulated lime, which is considerably more expensive than ground limestone, and has the same neutralising value. It was worth using in this situation as the field was not easily accessible, and the granulated lime could be spread by the farmer himself when it stopped raining. In this situation there was a rapid rise in pH. This will be likely be followed by a rapid decrease.

4. Phosphate and potash

As well as pH and Mg, a 'routine' soil analysis will also give phosphate (P) and potash (K) status results. It is essential that both P and K have at least Moderate status. If they aren't then the productive grasses and clover will not be able to compete as effectively with the rushes, the clover will not be able to fix as much nitrogen (depressing yield), and any applied nitrogen will not be fully utilised by the grasses in the sward.

If a field's soil analysis result is Low for P or K then you should target livestock manure applications to this field, or apply supplementary nutrients. Livestock manures tend to be higher in K than P, so if a soil is P deficient you might be better finding a different source of P, such as rock phosphate or superphosphate. Be aware that rock phosphate should not be applied in the same year as a lime application, as this will significantly reduce the availability of the phosphate (superphosphate is not affected in the same way).



Summary

The grassland management essentials of drainage, soil structure, pH, and soil nutrient status must all be investigated and addressed if necessary. Addressing these things can be costly and time-consuming, but are absolutely essential to the successful and sustainable management of rushes in the long term.