# Field Lab Notes: Management Essentials
# Managing Rushes Without Chemicals

## *Grassland management essentials: part 1*

This is the first of a two-part note on the essentials of rush management. This part will look at drainage and soil structure – physical management of the soil. The next part will look at managing soil chemistry: pH and the nutrients phosphate and potash.

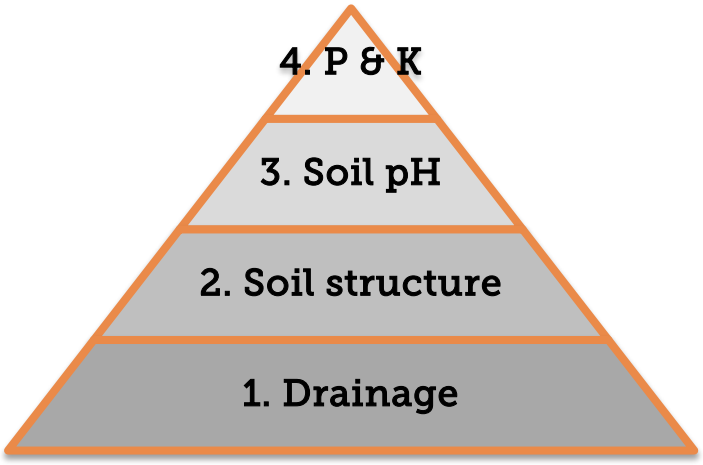
## *Drainage and soil structure: physical management of the soil*

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 by topping and grazing. But this can only reduce, rather than eliminate, them.

### 1. Drainage

The foundation of effective rush management is good drainage. It must be examined first, and, if it is a problem, it must be addressed first. If a soil does not drain it will be prone to poaching and compaction; lime applied to soils with standing water will get washed out; and nutrients applied to waterlogged soils could be lost.

Drainage can be assessed by digging a soil pit, when conditions aren't too wet. A very wet soil, a high water table, and gleying (greyish blue soil with red/orange flecks) are all signs of poor drainage. If your soil is poorly drained, then think about the drains.

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How is your field drained? Is it drained at all? Do you need to lay drains? Would a V-shaped open drain (pictured) work? Is your soil heavy enough for mole drainage? Are the outfalls choked? Can you clear them? Is there a broken pipe that needs replaced?

Field drainage can be very expensive, so you should start with the cheapest solution: clearing outfalls. If you need to hire a digger to replace broken drains, re-install drainage, or install drainage for the first time, then costs can start escalating. Is it worth draining wet field corners or poorer fields? It could be more costly than any productivity benefits. You could leave these bits, managing them as a wetland or habitat mosaic in an agri-environment scheme.

In some cases where compacted subsoil is preventing water from draining away, subsoiling may be a solution. This can be identified by looking at soil structure.

## 2. Soil structure

A compacted soil makes it more difficult for plant roots to reach the soil nutrients further down, as well as making drainage more difficult.

It is very important to assess soil structure before doing anything about it. Subsoiling, sward lifting, sward slitting, and aeration all have a cost, and there is no point in paying this cost if the operation isn't the right one for your soil compaction issue. And there is definitely no point in paying this cost if your soil is not actually compacted. A doctor would diagnose an illness before prescribing the right medicine as a treatment. The same applies to soils: the problem must be diagnosed before treating. You can do this by digging a pit to assess soil structure.

Is your soil compacted at all? If it isn't, you don't have to do anything. If it is, then what part of the soil is compacted? Is it deeper down in the subsoil, or higher up in the topsoil? Subsoil compaction can be addressed with a subsoiler, which is costly, and should be avoided unless necessary. If you have topsoil compaction then you should assess how bad the compaction is. Use a sward lifter on very compacted topsoil, and a sward slitter or aerator on lesser compaction nearer the surface.

## *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.