

Improving grass growth

Practical Guide



Maximising the performance of grass leys means grass is productive for longer and the time between reseeds can be extended.

Management of clover within a grass sward will reduce the need for bought in nitrogen fertiliser and help make best use of nutrients on the farm. Improving longevity of grassland will also increase soil organic matter, lock up carbon, make best use of resources and help to reduce the farm carbon footprint - ploughing up grassland releases Nitrous Oxide (N₂O) and Carbon Dioxide (CO₂), both greenhouse gases implicated in climate change.

With a substantial part of Scotland's ploughable area laid down to grass we need to consider a management strategy which, after the grass sward has been established, maintains optimum production for its lifetime, irrespective of whether it is laid down as a permanent 10-15 year ley or a short term ley in an arable rotation.

This Practical Guide looks at how to optimize grass production.

Growing improvements need to start at the grassroots!

Key to optimising grass growth is to start with soil health. Regularly testing farm soils for soil pH and nutrient levels ensures that an effective nutrient budget can be created. The optimal pH for grassland fields (mineral soils) is 6.0 ([Technical note \(TN726\): Fertiliser recommendations for Grassland](#)). Below these values, nutrients within and applied to the crop are not accessible by the plant roots meaning applied nutrients provide reduced or no benefit to the grass growth. Nitrogen can be easily lost to the atmosphere or can leach to watercourses. Neither is good for the environment or farm profits.

If a soil test identifies low pH, a liming schedule to bring levels back to the optimum should be put in place. Often driven by costs of inputs and application, farmers need to be aware of the neutralising value (NV) of any product applied. A more expensive product may actually be cheaper accordingly and more cost effective when the NVs of alternative products are considered. A minimum of 1 t/ha/yr is recommended to maintain soil pH. The maximum rate that should be applied at any one time is 7 t/ha, however this is not recommended; higher applications should be split and applied over two applications during the year.

Another consideration for applying lime is timing in relation to slurry and/or urea applications. To prevent N loss from the ammonia in slurry/urea, applications should not be made to soils limed within 3 months. If slurry/urea has been applied prior to the lime, it is recommended that a minimum of 10 days is left before spreading lime.



This practical guide is part of a series looking at steps you can consider to reduce emissions whilst maintaining a profitable farm business.

For more information, tips and ideas and to read what other farmers have done, visit www.farmingforabetterclimate.org. Find us on [Facebook](#) and follow us on [Twitter](#) @SACFarm4Climate.

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Soil structure

Knowing your soil structure is as important as soil pH & nutrient status. Compaction can be a common problem in grassland soils, particularly used for a silage crop or grazed in wet conditions. Compacted soils prevent good root development, nutrient transfer and can result in waterlogged soils reducing access and promoting methane release.

Taking 30 minutes to dig soil pits in different areas of the field can give you an indication of any underlying soil structure problems. Download a copy of [Valuing Your Soils](#) from our website for details of how to check your soil structure. If compaction is identified, knowing the depth and possible causes will help with decisions made about how to repair or rectify the problem. Options could include fixing failed field drains before using machinery such as a soil slitter or sward lifter.

Maintaining a healthy soil structure will increase soil biodiversity, improve soil organic matter and lead to better nutrient transfer for crop productivity.

Nutrient budgeting

Many farms apply the same fertiliser year on year without accounting for factors which affect the crop and soils fertiliser requirement.

Regular soil analysis results allow the adjustment of fertiliser applications to match the needs of the crop. Targeted fertiliser applications reduce the risk that excess nutrients are lost to the environment and ensure crops are not deficient in the major nutrients.

Testing nutrient content in slurries, manures, and digestates prior to application provides the most accurate nutrient values and will help maximise the benefits of the budget. Where crop requirements aren't met by the organic manures, inorganic sources can be used to fill the shortfall.

It is important to remember that if grass is cut for silage or hay crops, the potash within the soil will be removed with the harvested material and will need to be replaced to ensure efficient grass growth. Plants use potash to regulate leaf and root development and function and as a result it is as important to the crop as Nitrogen.

Establish a clover sward

Inclusion of clover in grass swards can reduce the need for inorganic nitrogen applications, saving money whilst maintaining production levels and reducing the farm carbon footprint.

For grass and clover aim for pH 6.0. Where cereals are grown in the rotation lime to an average of pH 6.2. Remember a grass/clover silage fixing 150 kg/ha (120 units/acre) of nitrogen still needs at least 75 kg/ha potash to replace crop offtake. A nutrient budget will help you plan nutrient additions and maximise both production and profit.

Rejuvenating the sward

An alternative to ploughing up established grass swards is 'stitching in' to provide new grass. Machinery using tines disturbs the topsoil before distributing grass seed along the rows made by the tines. It's best done at either end of the growing season giving the new grass time to establish before any frosts or existing sward growth smothers the new plants.

Post establishment weed control

Annual Weeds

Weed burdens of moderate populations of non winter hardy annuals such as dead nettle and fat hen, or open growing weeds such as field pansy and knotgrass can be taken out by grazing stock. Chickweed is a winter hardy annual more commonly found when establishing short term leys in arable rotations. Where not controlled by grazing, specific control measures must be operated to control weeds without taking out the clover.

Perennial Weeds

Where there was a population of docks or spear thistles in the old sward, there will be a seedling population in the reseed. Specialist advice can allow these to be controlled as seedlings with clover-safe herbicide mixes.

Weeds are more effectively controlled as seedlings so it is important to treat them where possible in the first year of establishment.



Useful resources

- ♦ [Practical Guide: Soil Sampling I](#)
- ♦ [Practical Guide Soil Sampling II](#)
- ♦ [TN 643 Weed management in grassland](#)
- ♦ [Healthy Grassland Soils Pocketbook](#)
- ♦ [TN 726: Fertiliser recommendations for Grassland\)](#)
- ♦ [Regional Phosphate & Potash recommendations for Scotland](#)

Links to these resources are available on our website.