

## Aiming high? Start low - how soil can help make your dream farm a reality

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*Within my role at BGS I'm involved with the DairyCo funded Demo Farms looking at the outcomes of trials on related issues such as soil compaction and slurry-nutrient utilisation. Before joining the team at BGS I worked with farmers to implement soil and nutrient action plans aimed at reducing losses and maximising utilisation efficiency of these two vital resources.*

Soil quality can arguably be viewed as the central point on a farm decision making framework, its effects being experienced indirectly through the quality and quantity of produce, the efficiency of productivity operations, and the diversity and health of ecosystems (and their services) in the connected catchment.

The way soils are managed can either help or hinder your ambitions of better returns. Here are my three top tips on managing soils so that they work for you.



### Tackle soil compaction

An estimated 70 per cent of grassland soils in England and Wales exhibit signs of surface compaction, resulting in reduced productivity and nutrient utilisation, limited accessibility, soil-air nutrient cycling also affected. Compaction can add up to hundreds of pounds per hectare on lost productivity and wasted nutrients.

Start by identifying whether you have compacted soils, and the severity and depth of the problem. If you don't have compaction, mechanical aeration is questionable. Different depths of compaction require different treatments.

To assess the soil for compaction dig a series of small pits to look at the top 40 cm of soil. Do this when the soil is neither too wet nor too dry, e.g. the drying out period in early spring.

- Soil structure (that's the overall look) should be open and loose.
- Soil aggregates (the clumps of soil made of a mixture of soil particles held together by moisture and organic matter) should be rounded and crumb-like.



The [Soil Assessment Tool](#) will help with your assessment

To learn more why not attend [soil workshops](#) held at BGS demo farms

The complex root structure of grasses naturally helps remedy compaction once you remove or reduce the cause – heavy machinery, treading in wet weather, hot-spots around infrequently moved feeders.

Slitters for surface compaction and sward-lifters for compaction below 10 cm help loosen soils more rapidly. These treatments are known to improve water infiltration and soil structure, making soils easier to manage and more effective at cycling nutrients. Results from our demo farms are also beginning to shed light on the influence on these mechanical treatments on sward productivity.

One demo farm that's on a sandy clay loam with compaction issues has obtained grass growth increases of 3.8 per cent from slit aeration and 13.0 per cent from sward lifting compared to an untreated control plot over two years. Sward lifting and slit aeration combined also increased grass growth by 15.1 per cent compared to the unaerated control. In both years, increased grass offtake was evident from the first grazing event following treatment.

Another demo farm on a medium clay loam with compaction issues has noted grass yield reductions at first grazing following the use of a sward lifter, probably due to this heavier soil being too wet at the time of treatment. Yields here matched those of an untreated control plot by the third grazing and were comparable when considering the whole season total.

## Fix or mitigate soil erosion and run-off risks

There's no point in allowing soil, and the nutrients it carries with it, to wash or blow away. Soil is a non-renewable resource that's vital to your business.

It's common-sense, but here are some reminders:

- Don't over-stock on hills and marginal land.
- Choose fields for overwintering carefully, favouring flat fields with light soils.
- Sturdy hedges help protect against wind and run-off erosion as well as provide shelter for stock.
- Site feeders on level ground and avoid using gateways on slopes.
- Minimise the extent of bare soil and promote regrowth as soon as possible through removing stock, remedying soil structure, patch-seeding and fertilisation.
- Maintain buffer strips.

## Maintain and replace soil organic matter (SOM)

Grazing livestock are part of the soil food web. At the bottom of this web are plant litter, roots and detritus from all the organisms feeding at higher levels.

Soil organisms and micro-organisms decompose this organic material into humus, cycling and unleashing nutrients into plant available forms in the process. SOM has a very high ability to hold on to soil nutrients, similar to clay particles, whereas in inert sand they are easily lost. SOM also has a buffering effect, meaning it helps soil hold its pH for longer.

SOM particles are very light, they help make soils porous but are also easily blown or washed away.

The decomposition process also releases carbon dioxide to the atmosphere. If the supply of new organic material to the soil is too low it results in a net loss of soil carbon.

More information is available in the EBLEX Better Returns beef and sheep manual 3  
[Improving soils for Better Returns](#)