Costs, savings and improvements

Improvements in production and potential cost savings are key drivers for implementing an MGS. Current research conducted by Rothamsted Research has shown that TechnoGrazing, a form of managed rotational grazing, is able to support higher stocking rate than a set stocked system. An improvement that increased over time, starting at 2,000 Kg LW/ha in 2018, and increasing up to over 3,000 kg LW/ha in 2021; compared to set-stocking which has maintained a stocking rate of around 1,400 Kg LW/ha (Rivero et al. 2024).

An MGS can have varying cost implications depending on factors like infrastructure, land management practices, and livestock type.

Fencing: Initial setup costs for temporary electric fencing kits can range from 65p/m to £1.17/m depending on number of wires required (1/2 for cattle, 3 for sheep). Permanent electric or standard stock fencing can be used when splitting larger fields, that may then be sub-divided with temporary. Standard stock fence costs £6 - £7.50/m for labour and materials. Fencing is regularly including as a funding item within grant schemes, so it is worth checking for available grants at time of reading.

Water: Water infrastructure, including portable options are also often included. Drag troughs that connect to an overground water pipe starts from approximately £300 for a 100l trough, and towable bowsers with a drinking bowl can cost from £850 up to £1400 depending on size.

Set up costs can be offset by efficiencies gained through improved grassland management. Increasing the productivity of your grazing allows a reduction in feed and fertiliser costs in higher input systems. Low input systems can benefit from greater grazing capacity, providing the opportunity to increase stock numbers or extend the grazing season, therefore reducing winter costs.

> We've increased our stocking rate by 35% in five years and, in terms of kilograms of liveweight per hectare, we've increased by 50%
>
> Charley Walker, grazing native breed stock on a rotational paddock system

Figure 3: These figures provide reference values, but will vary according to weather, location, grass variety and age of pasture.

SEASON	Feed available (kg DM/ha) estimations according to compressed grass height				
	1cm	2cm	3cm	4cm	5cm
Winter	830	990	1140	1300	1460
Spring	680	1050	1340	1580	1780
Late spring	800	1120	1400	1650	1880
Summer	930	1190	1450	1710	1980
Autumn	810	1050	1290	1540	1780

From ahdb.org.uk/knowledge-library/grass-allocation-feed-budgeting-wintering-at-grass

Figure 4: General intake requirements for different classes of sheep. Allows for some feed rejection and is based on high feed quality for a flock scanning at approximately 150%.

STOCK	Intake reqs (% of body weight)
Dry Ewes Mid pregnancy ewes	1.5
Late pregnancy ewes	2.0
Mid to late pregnancy ewes	2.5
Early lactation ewes	3 or more
Growing lambs	4.0

Contacts

Advice and support from our Farming and Land Use team
Speak to a farming advisor: 0117 314 5100
General enquiries: 0300 330 0100
Email: producer.support@soilassociation.org

Resources:

Download a pdf of this and other guides at www.soilassociation.org/guides-for-whole-farm-planning/

For other practical resources and events, see www.soilassociation.org/farmers-growers

POSITIVE OUTCOME AREAS

- SOIL
- CARBON
- WATER
- BIODIVERSITY
- ANIMAL HEALTH & WELFARE
- SOCIAL

TECHNICAL GUIDE

Movements for maximising permanent pasture

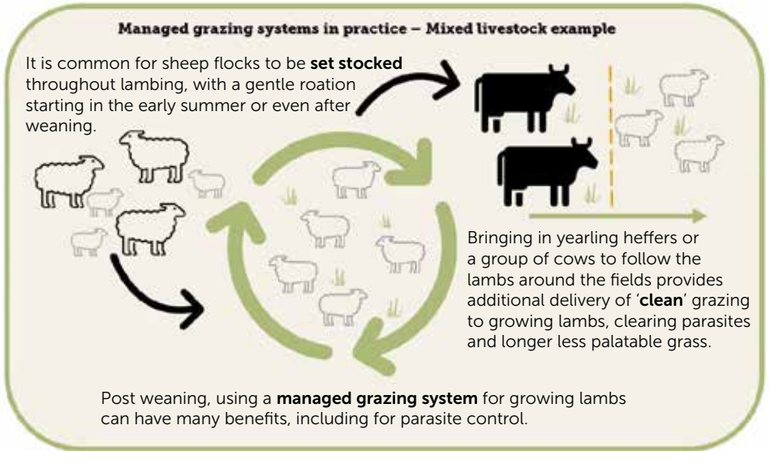
What do we mean by "movements"?

When it comes to grazing livestock there are many terms used to describe the patterns of movement across the farm holdings. The various terms describe slightly different aims, timescales and methods. However, the key to them all is the benefit provided by regular movement of the stock over and above a 'set stocked' system. The term 'managed grazing system' (MGS) can also be used to encompass this principle, covering systems like rotational, cell, mob, strip and adaptive.

The dairy sector has led the way with utilising paddock systems to help maximise the quantity and quality of their grazing for many years. However, the use of permanent and temporary fencing to divide larger fields to focus grazing activity has now increased considerably in the beef and lamb sectors. Variations of movements are now being used across the sectors towards different goals, including grazing utilisation, livestock and soil health, reducing inputs and increasing biodiversity.

How do I make sure this will work for me?

Implementing a new MGS can be as simple as splitting larger fields in half and moving stock between the two, or round a few fields in an accessible block. Although the full range of benefits will not be achieved at this level, there will be positive impacts that can be built upon. Some farms have the continuity of stock and field size where large mobs can be moved regularly with minimal temporary fencing and associated aspects. However, many need to consider the combination of set stocking and some level of a more managed system across the farm and year.



Example of how a MSG can be implemented on a mixed livestock farm.

Making this work – other considerations

Which stock class will be the easiest to start with, and what are the infrastructure requirements for those animals:
For examople, suckler cows requiring maintenance feed levels could be rotated around rougher grazing and will help clear less desirable grasses when pushed a little. Adequate water supply is often the main disadvantage when using cattle. However, portable bowsers or troughs and solar pumps can help facilitate the movements.

Remember that the livestock are learning to:
How to stay behind fences, moving to fresh forage and getting used to closer quarters with flock or herd may all be new and take some adjustments. The Progressive Grazing Company have useful resources for training livestock with electric fences. This includes a step-by-step guide for the introduction of temporary fencing, reducing risks of challenge, potential escapes, and stress for both farmer and livestock.

Be prepared to be flexible, and have a backup plan:
Weather extremes could result in less grass than expected, this may mean larger paddocks or more frequent moves are required. Equally animals may need to be moved to an area of adequate shelter. Adding shade and shelter when planning permanent boundaries can make ongoing management simpler, as well as providing health and production benefits to both livestock and forage.

Whole farm systems

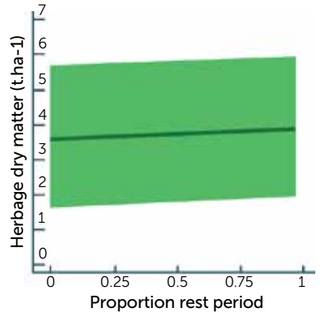
Whether used across the entire farm or on selected fields, managed grazing allows pastures to rest and recover between grazing periods. This rest period maintains ground cover and root structure, which helps reduce soil erosion and compaction, improves water infiltration, and supports a healthy soil microbiome. In turn, healthier soils promote more vigorous and diverse forage growth, leading to improved yields over time. As plant diversity increases, so too does root depth and organic matter, which enhances nutrient cycling and boosts pasture resilience during drought or heavy rainfall.

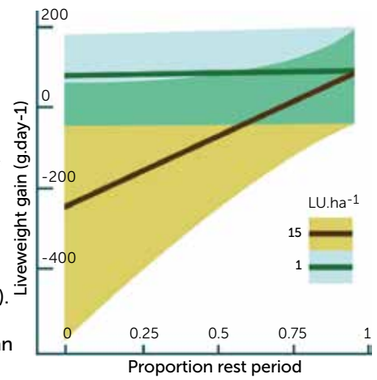
These outcomes can be seen more quickly when longer residuals are left after each grazing. Leaving more leaf material allows plants to photosynthesize effectively without drawing heavily on soil reserves. A typical target is to leave 6–10 cm of residual height, which provides sufficient leaf area for most pasture species to regrow efficiently. Additionally, removing livestock at this point reduces their exposure to infective parasite larvae, which are most commonly found within the lower 6 cm of pasture; further supporting both pasture and animal health.

What the science says about managed grazing systems

When considering the advantages and disadvantages of an MGS the aims and context are important. For example, when looking at livestock performance the optimum system for finishing lambs is quite different from that for the maintenance of suckler cows. Additionally, due to season, covers and rate of rotation those systems will have varying impact on environmental outcomes.

Rotational grazing (RG) systems are widely understood to produce more grass. Traditionally they focus on regular movements and the high palatability of the forage available, making them well suited to growing stock and sheep. In an analysis of multiple grazing studies Jordan et al. 2022, found that when RG systems are used dry matter (DM) production was increased by 0.31 tonnes per ha, with the additional production being assigned to the increased rest period provided by the rotation. The importance of the rest period was further emphasised in the paper, noting its positive relationship with livestock daily liveweight gain (DLWG) under higher stocking densities.





Productivity effects of rotational grazing. Conditional effects of a) rest period (proportion of grazing season) on herbage dry matter production (DM, t.ha–1), and b) rest period (proportion of grazing season) and stocking density (LU.ha–1) on sheep and cattle daily liveweight gain (g.day–1). Error bars show 95% Credible Intervals. Jordan et al. 2022.

Mob grazing systems are an adaption to the traditional rotational method, they aim to maximise the impact of rest periods and stock densities for grass production and therefore root and soil health. Using high impact and long rest periods to add organic matter to the soils whilst maintaining livestock production. However, this system tends to be best suited to cattle as they can better utilise the taller forage, as well as having the weight for the 'trampling' aspect. American research by Roberts & Johnson, 2021, found that mob grazing significantly increased Soil organic matter and nitrogen.

Measuring and monitoring

Effective ongoing management of a production focused grazing system requires understanding of the quantity of feed being produced, usually expressed as kilograms of dry matter per hectare (kg DM/ha) (see Figure 3, back page) and the requirements of the relevant stock class (see Figure 4, back page). Using a sward stick is a good starting point, for more info on sward sticks and other useful baseline monitoring please see previous guide: Monitoring for maximising permanent pasture.

Grass budgets can help plan initial implementation of system, dictating either size of paddock or number of animals grazing. Budgets can also be used with the help of tools like Grass Check GB to predict when flexibility may be required. AHDB has detailed resources to support creating a grass budget for your farm and stock, including this Feed Budget Planner Tool.

In a system that has a more biodiversity/conservation grazing focus or is being implemented as part of a deferred grazing block, the quantity of dry matter becomes harder to measure, and uneaten forage may increase. Lower stocking densities are recommended in this case and more regular monitoring of livestock body condition score should be implemented.

Timescales

Labour commitment is often expressed as one of the main reasons for not implementing a MGS on farm, quoted alongside infrastructure needs as the main disadvantage of these systems in a 2022 paper (Jordan et al.) about the uptake of RG and herbal leys on English farms. As with any change on farm, initial set up will need focus time, the extent required will depend on the equipment and the intensity of your intended MGS.

However, time spent securing boundaries, servicing and upgrading water infrastructure where needed, and planning the desired route and backups, will all be time well spent. Following adequate set up, daily time commitments will be minimal, with usual checking or moves being required depending on intensity. Shepherding rounds may even be shorter due to livestock being in larger groups and smaller paddocks.

Impact

Improved soil health, increased soil organic matter and enhanced water infiltration leading to more resilience in both high and low rainfall – particularly in a mob/tall grass/adaptive systems.

Enhanced pasture productivity – increased yield of palatable grasses is a key advantage of a well-managed rotational/cell/strip system. Improved yield and diversity of species is a highlighted benefit of mob/tall grass and adaptive systems.

Increased livestock health and performance – with appropriate rest periods all MGS can decrease internal parasite pressure and support target DLWG.

Reduce inputs – improved soil health and appropriate rest periods support plant productivity without the requirement for inorganic fertilisers. Supplementary feed requirements can also be reduced due to enhanced pasture productivity.

Increased biodiversity – a variety of sward heights and less ground being grazed at any one time can increase bird, mammal and invertebrate habitat and numbers. This benefit can be increased by adding wild flower strips and/or hedges where new permanent boundaries have been added.

CASE STUDY

James Johnson Broomhouse Farm, Northumberland

Knowledge driving system change
After attending a training course where the benefits of adding even a single fence down the middle of a field and moving livestock back and forth were highlighted. James has been keen to make the most of rotations to boost grass production, as well as to explore the additional outcomes.

What happens after that? "Less fertiliser required, so there's a saving, plus better soil health, less impact from flooding and drought, and a farm that's more financially and weather resilient," responds James.

Allowing for flexibility
The grazing systems implemented across the farms do not follow one prescriptive label but takes aspects from different models depending on time of year, weather and stock. James says, "It's not restrictive, I move them when they need to be moved". Cattle or cutting are also used if the quality of the sward needs to be reset to suit the sheep grazing. "At Broomhouse we use sheep, all year round, and cattle come off the fell for their stewardship agreement and tidy up the permanent pastures that don't get reset by cutting."