

Managing Swards By Surface Height

Introduction

Modern grazing systems are managed by manipulation of sward height, which has been the focus of grassland research over the last decade. In order to understand how existing systems of production based on control of sward height work, it is necessary to know how sward height affects grass production, quality and pasture sustainability and how it affects animal performance.

This information enables the consequences of a change in sward height on both pasture and animal to be predicted, leading to recommendations for optimum systems. Turning these recommendations into a grazing management system must also take into account how variation in grass production within and between seasons can be accommodated by integration with conservation and planned fertiliser use. Also, it is necessary to see how parasite infection is controlled and supplementary feeding incorporated.

We evaluate pastures so that we can predict animal performance (liveweight gain, output of gain/ha) and match stocking rate to herbage growth to get optimum grass production and utilisation.

Grass Height As An Evaluation Method

Grass height is important because it affects the amount of grass produced during the grazing season and also the quality of that grass. These two factors thus determine the flow of nutrients to the animal throughout the grazing season.

Grass height also has direct effects on the animal since it affects the ability of different species to harvest their daily nutrient requirements.

Why Describe Pastures By Sward Height?

Mainly because it is the easiest way to visualise and measure and it adequately for the UK's mainly set-stocked systems.

Alternatives	Measurement	Units	Constraints
Herbage dry matter or organic matter above ground level	1 m ² sample plots cut, dried and weighed then ashed for OM.	kg OM/ha	Cannot visualise without training, measurement problems-needs oven
Herbage allowance measured by falling plate meter	Simple device to measure and store data on sward height then convert it to DM/ha.	kg DM/ha	Assumes there is a constant relationship between sward height and Kg dm /ha. But some swards are less dense and it changes through season – but still a useful measure within a farm
Residual sward height	Grass height on vacating field	cm	For rotational grazing system

The benefits and ease of sward height measurement outweigh the loss of accuracy compared with herbage dry matter production estimates for most situations, but increasingly, dairy farmers prefer the more precise falling plate measure.

Effect Of Grazing Sward Height On Grass Production And Yield Of Nutrients

At any given sward height there will be a range of values for dry matter yield and quality. Grazing animals usually severely defoliate the patch they graze in the spring when quality is high, but later in the year may be more selective and graze closer to the surface. Pasture regrowth after defoliation is dependant on soil moisture, temperature and nutrient supply, but is also affected by the severity of defoliations. There is a classic lag phase: (1), followed by a period of rapid leaf growth with little wasted sunlight (2), then a steady decline in growth due to shading and senescence (3).

The table below can be used to help you make decisions about how changes in stocking rate which you impose will affect both your pastures and stock. For specific periods of the year, changes in sward height are shown and the consequences for production and subsequent grass quality. Effects are shown for both ewes and lambs and weaned lambs separately – be aware of what your management does – early grazing pressure can improve swards without damaging liveweight gain of lambs

Guide To Changes In Sward Height And Their Effect On Sheep Production

Time of Year	Current Height (cm)	Direction of Change	Contents Of Grazed Horizon	Class Of Stock	Effect	Comment
April, May	6	↓	New leaf	Lambs	Nil	Lamb buffered by milk
April, May	6	↓	New leaf	Ewe	Weight loss	Unless body reserves available, eventually milk yield will fall, for 2 weeks no effect (if initial CS 2 ½)
April, May	6	↑	New leaf	Ewe	Weight gain	Seed head formation will result, leading to pasture deterioration and fewer tillers
June, July, August	6	↓	New and senescent leaf	Lamb	Reduction in growth of up to 100 g/day	Milk no longer a buffer, the later in the season, the more senescent material
August	6	↓	New and senescent leaf	Ewe (weaned)	Weight loss	Benefit to ewe if overfat. Benefit to pasture.
October, November	8	↓ 5 cm	Mainly regrowth	Ewe (tupping)	Weight gain	50% herbage utilisation – skim the “top off” flushing
November, December	5	↓ 3 cm	Mainly trash	Ewe (tupping - early pregnancy)	Weight loss	Low intake, can increase embryo mortality (case for supplementing)
December, January	5	↓ 3 cm	Mainly trash	Ewe (40 days pregnant)	Maintenance	Reduce winter kill in pasture

As a guide, on lowland pasture an extra 6 ewes/ha will reduce sward height by 1 cm/week (6 ewes/acre will reduce sward height by 1 inch/week)