

The effect of increasing grazing season length and stocking rate on milk productivity and feed requirements on grazing systems in the Border Midlands Western region

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Summary

- Highly productive extended grazing systems are achievable in the BMW region.
- Extending the grazing season by 60 days increased both grazed grass utilisation and milk and milk solids production and reduced annual supplementary feed requirements.
- Increasing stocking rate resulted in increased milk and milk solids production per hectare but also in increased supplementary feed requirements.

Introduction

Extending the grazing season has been shown to be an effective way to reduce milk production costs in temperate regions of the world where grass can be grown cheaply. In recent decades, Irish dairy systems research has focused on strategies to improve grass utilisation and increase the proportion of the milking cow's diet coming from grazed pasture. Despite advances in grazing systems at research level, uptake at farm level has been slow, particularly in the border, midlands and western (BMW) regions. National farm survey data shows that, although the national average grazing season length is currently 235 days, the duration of the grazing season in the BMW region is considerably shorter (213 days) resulting in significantly reduced grass utilisation. Although previous studies within the region have shown lower spring and autumn grass growth when compared to Moorepark, extended grazing systems have been practiced at the Ballyhaise site over the past 10 years, with grazing routinely commencing in mid-February and continuing until mid-November (260–270 days). A multi-year whole farm grazing systems trial was established in Ballyhaise in 2017 to look at the impact of increasing grazing season length and stocking rate (SR), on animal performance, pasture productivity and imported feed requirements within a grass based milk production system in the BMW region.

Treatments and Results

This study was carried out at Ballyhaise Agricultural College during 2017 and 2018. The study aims to quantify the impacts of alternative SR and grazing season lengths on animal and grass productivity in the BMW region. In January 2017, 120 spring calving dairy cows were randomly assigned to one of four grazing systems comprised of two grazing season (GS) lengths: average (AGS; 205 days; 15 March to 20 October) and extended (EGS; 270 days, 15 February to 20 November) and 2 SR treatments: medium (MSR; 2.5 cows/ha) and high (HSR; 2.9 cows/ha); these treatments are further explained in Table 1.

Table 1. The four grazing systems at Ballyhaise Research Farm

Stocking rate (LU/ha)	2.5	2.9
Grazing season length (days)		
Average grazing season (205 days)	AGS X MSR	AGS X HSR
Extended grazing season (270 days)	EGS X MSR	EGS X HSR

The effect of GS and SR on animal performance is displayed in Table 2. Grazing season length varied from 209 days for both AGS treatments to 262 and 259 days for the MSR EGS and HSR EGS treatments, respectively. Extending the grazing season in spring and autumn resulted in increased grazed grass utilisation, increased milk and milk solids production per cow and per hectare and a significant reduction in the requirement for supplementary feeds. Stocking rate had no significant effect on individual animal performance. Higher SR resulted in significantly increased milk and milk fat plus protein production per hectare but also in significantly increased supplementary feed requirements. As both AGS treatments were indoors for an additional 60 days, significantly more concentrate and silage was required during lactation compared with the EGS treatments.

Table 2. Effect of stocking rate (SR) and grazing season length (GS) on animal performance and feed requirements during 2017 and 2018

Grazing season length	Average		Extended	
	Medium	High	Medium	High
Stocking rate				
Milk yield (kg/cow)	5,040	5,211	5,178	5,243
Milk yield (kg/ha)	12,619	15,131	13,993	15,166
Fat plus protein yield (kg/cow)	423	448	454	458
Fat plus protein yield (kg/ha)	1,059	1,299	1,134	1,327
Grazing rotations (No.)	5.3	5.8	6.3	6.9
Grazed grass utilisation (t DM/ha)	9.4	10.0	10.3	11.6
Total grass utilisation (t DM/ha)	14.5	14.0	13.9	14.7
Concentrate fed (t DM/cow)	0.68	0.70	0.64	0.64
Concentrate fed (t DM/ha)	1.71	2.03	1.62	1.87
Silage fed (t DM/cow)	1.66	1.78	1.27	1.19
Silage fed (t DM/ha)	4.15	5.15	3.17	3.46

Conclusions

The results of this study show the potential of both extended grazing and higher SR to support increased milk productivity while reducing supplementary feed requirements. Increasing SR resulted in similar milk production per cow and significantly increased milk output per hectare.