

EFFECT OF REGROWTH INTERVAL IN THE AUTUMN ON GROWTH OF GRASS IN THE AUTUMN/WINTER PERIOD

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ABSTRACT

The effect of Autumn grass regrowth interval on herbage production was studied during the Autumn/Winter periods of 1992/93 and 1993/94. Treatments, consisting of continual grass growth intervals ranging from 3 to 22 weeks after September 1, were used to examine the effects of Autumn grass regrowth intervals on herbage production. Herbage dry matter accumulation increased linearly from weeks 3 to 12, then plateaued and began to decrease after week 15 (mid-December). Dead material increased over time. Repeatedly harvested swards (every, 3, 4 or 5 weeks) generally produced less ($P < 0.05$) herbage dry matter than corresponding continual growth treatments. Sward digestibility remained high (780 g/kg) for 9 to 10 weeks) and then declined. Highest digestibilities were seen on the more frequently defoliated treatments. Spring herbage production was highest in treatments which had been harvested under a long regrowth interval during the previous autumn.

KEYWORDS

Autumn grass, defoliation, regrowth interval

INTRODUCTION

Grazed grass is normally the cheapest feed source on farms in temperate climates. Making maximum use of grass, especially grazed grass, should thus increase farm production efficiency. In the Irish context where grass growth is seasonal, ranging from little or no growth during the Winter (December to February) to rapid periods of growth in May to July and a definite decline for the remainder of the Summer/Autumn, matching grass supply and herd demand is made difficult. On a well stocked beef farm, the demand for grass in the Autumn period (August/September) almost matches the total farm supply. Unless stocking rates are reduced in the October/November period (e.g. sell stock or conserve less area for winter feed) or other feeds are introduced, the demand for grass will exceed supply. The practice of allowing grass to accumulate in August/September and offering it to stock in October to December period has been suggested as a means of postponing the end of the grazing season. The present experiment examined the effect of pasture regrowth interval in the Autumn on grass growth and pasture quality.

MATERIALS AND METHODS

The effects of Autumn regrowth intervals on grass accumulation were studied during the Autumn/Winter periods of 1992/93 and 1993/94. The swards, which in the first year consisted of approximately 50% *Lolium perenne* and in the second year was dominated by *Poa* and *Agrostis* species, had silage harvested in late May and were subsequently grazed until September 1. Fertiliser nitrogen in the form of calcium ammonium nitrate was applied on September 1 at rates of 35 and 50 kg N/ha in the first and second year of the experiment respectively. Treatments, consisting of continual grass growth intervals ranging from 3 to 22 weeks after September 1, were laid out in a randomised complete block design with five replications. Plots measuring 5 x 2 m were harvested to a stubble height of approximately 4 cm. Further plots in the same design allowed for the comparison of repeated harvesting (such as 3, 4, 5 or 6 weeks), with the longer unharvested growth intervals.

RESULTS AND DISCUSSION

Results presented represents the mean of the two year data. Data for year 1 have been presented previously (O'Riordan 1994). Grass dry matter accumulated (linearly) during the first 9 weeks (i.e. September 1 to November 1) of continual growth, then plateaued until week 15 (mid-December) and then began to decrease (Table 1). The proportion of dead material in the sward increased from a value of 0.05 (average over weeks 3 to 7) to 0.16 and 0.21 in weeks 15 and 16, respectively. Swards which were repeatedly harvested, generally produced less ($P < 0.05$) herbage dry matter than the corresponding continual growth treatments (Table 2). However, extending the regrowth interval beyond five weeks removed most of the yield benefit observed in the continual growth approach. Herbage production in Spring (early April) was higher ($P < 0.05$) in swards harvested under the long rotation system in the previous autumn.

Sward digestibility (*in vitro* DMD) was maintained over the first 9 to 10 weeks at approximately 780 g/kg, but then declined to 700 g/kg in mid-December (week 15) and reached 610 g/kg by late January.

While short regrowth interval herbage tended to have higher digestibilities than that from the longer regrowths, these differences did not attain significance until the continual growth interval approached 12 weeks.

Data are in agreement with those reported previously by O'Riordan (1994). Dry matter accumulated in a linear manner during the first 9 weeks after September; these accumulations were then maintained for a further 5 to 6 weeks, but then declined. An accumulation of short growth intervals yielded less herbage than corresponding longer growth intervals, however accumulated yields from regrowth exceeding 5 weeks added little extra to dry matter production. The steps to be taken at farm level to allow the development of long rotations, against a background of dry matter demand exceeding supply on many well stocked units, need to be further assessed.

REFERENCES

O'Riordan, E.G. (1994). Effect of rest interval in the Autumn on growth of grass in the Autumn/Winter period. *Irish Journal of Agricultural and Food Research* **33**: 1: 86 (abstract).

Table 1

Effect of growth interval from September 1 on total dry matter yields and on the proportion (%) of dead matter in the sward and on sward digestibility.

	Weeks of uninterrupted growth (after September 1)																s.e.
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	19	22	
Dry matter																	
Yield (kg/ha)	695	907	1168	1399	1670	1855	1979	1834	1830	1988	1985	2062	1857	1843	1646	1504	96.6
Proportion dead	0.07	0.05	0.06	0.03	0.04	0.07	0.09	0.08	0.10	0.12	0.13	0.13	0.16	0.21	0.34	0.29	0.009
DMD (g/kg)	782	774	796	785	799	804	788	786	762	768	750	717	706	719	668	611	7.0

Table 2

Comparison of long and of short regrowth intervals on grass dry matter yields in Autumn/Winter (kg DM/ha) and on herbage quality (DM) , g/kg).

Continual growth				Dry Matter		Sward			
from Sept. 1				Production		Digestibility			
<u>Long rotation (wks)</u>		<u>Short rotation</u>		in favour of long		(DMD) Rotation		<u>Sig. effect</u>	
		No. of		rotation (kg DM/ha)		<u>Long</u>		rotation length	
		Cycle				<u>Short</u>		DMD	
		<u>length (wks)</u>							
6	vs	2	x	3	+49	785	784		
8	vs	2	x	4	+401	804	788	**	
9	vs	3	x	3	+659	788	785	***	
10	vs	2	x	5	+339	786	792	*	
12	vs	4	x	3	+307	768	798	*	***
12	vs	3	x	4	+558	768	790	***	*
12	vs	2	x	6	+232	768	770		
14	vs	2	x	7	+34	717	743		*
15	vs	5	x	3	+301	706	747	*	***
15	vs	3	x	5	+382	706	774	**	***
16	vs	4	x	4	+123	719	773		***
16	vs	2	x	8	-121	719	756		***