

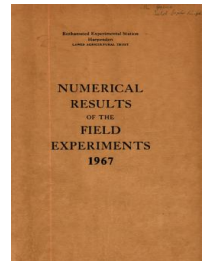
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67/R/EAV/C/38 Stimulated Grazing

Rothamsted Research

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67/C/38.1

SIMULATED GRAZING EXPERIMENT

(EAV)

Comparison of yields from cages 1 yard square (as used on the Grazed Reference Plots) and from cuts by motor scythe, Plot 6, Park Grass, 1967.

Design: 3 randomised blocks of 15 plots.

Area of each plot: 0.0037. Area harvested: Mower scythe - 0.0014, cages and frames - 0.0002.

Treatments: All combinations of:-

1. Nitrogen: None (N0), 1.5 (N1), 3.0 (N2) cwt N as calcium nitrate (divided into 4 equal doses).
2. Simulated grazing (G) and hay-cutting (H) as follows (G+ = cuttings returned, G- = cuttings removed):-

	Period			
	1	2	3	4
	To May 8	To June 27	To Aug 31	To Oct 30
Symbol				
G+ H*	G+	H	G+	H
H G+*	H	G+	H	G+
G- H	G-	H	G-	H
H G-	H	G-	H	G-
H	H	H	H	H

* With cages and frames.

Grazing was simulated by cutting the grass with a rotary mower at intervals of 10-14 days. In addition a cage and a flat frame 1 yard square were placed on each plot of treatments G+ H and H G+. At the end of each period the grass enclosed by them was cut with shears. Yields from these cages (C) and frames (F) were compared with yields taken by motor scythe (A) from adjacent areas of the same plots. The cage and frame were moved to a different quarter on the plot for each sampling period.

Basal applications: As in previous years (0.6 cwt P2O5 as super-phosphate, 2.2 cwt K2O as sulphate of potash, 0.4 cwt Na2O as sulphate of soda, 0.3 cwt MgO as sulphate of magnesia).

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Cultivations, etc.: Basal P,K, Na and Mg applied: Jan 12, 1967.

Calcium nitrate applied: Mar 3. G+ H and G- H plots cut:
Apr 4 and 20, May 8. H G+, H G- and H plots cut for hay,
calcium nitrate applied: May 8. H G- and H G+ plots cut:
May 22, June 5, 15 and 27. G+ H, G- H and H plots cut for
hay, calcium nitrate applied: June 27. G+ H and G- H plots
cut: July 14 and 27, Aug 8 and 31. H G+, H G- and H plots
cut for hay: Aug 31. Calcium nitrate applied: Sept 1.
H G+ and H G- plots cut: Sept 15, Oct 2 and 30. G+ H, G- H
and H plots cut for hay: Oct 30.

Standard errors per plot. Grass dry matter:

Mower scythe

1st Period (cuts 1-3):	1.59 or 14.9% (28 d.f.)
2nd Period (cuts 4-7):	2.79 or 8.8% (28 d.f.)
3rd Period (cuts 8-11):	2.96 or 11.4% (28 d.f.)
4th Period (cuts 12-14):	1.71 or 15.4% (28 d.f.)
Total of all 4 Periods (cuts 1-14):	5.43 or 6.8% (28 d.f.)

Mower scythe, cages and frames

1st Period (cuts 1-3):	Whole plot: 2.38 or 13.6% (10 d.f.)
	Sub plot: 2.46 or 14.0% (24 d.f.)
2nd Period (cuts 4-7):	Whole plot: 2.74 or 6.9% (10 d.f.)
	Sub plot: 3.31 or 8.3% (24 d.f.)
3rd Period (cuts 8-11):	Whole plot: 2.39 or 7.2% (10 d.f.)
	Sub plot: 2.38 or 7.2% (24 d.f.)
4th Period (cuts 12-14):	Whole plot: 2.09 or 15.4% (10 d.f.)
	Sub plot: 2.12 or 15.6% (24 d.f.)
Total of all 4 Periods (cuts 1-14):	Whole plot: 6.44 or 6.0% (10 d.f.)
	Sub plot: 5.22 or 4.9% (24 d.f.)

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SUMMARY OF RESULTS

GRASS. DRY MATTER

MOWER SCYTHE

	HH	HG-	HG+	H-G	H+G	Mean
1ST PERIOD (CUTS 1-3)						
	(±0.92)					(±0.41)
NO	6.5	7.8	6.0	3.0	1.6	5.0
N1	15.5	16.2	14.5	4.6	4.8	11.1
N2	18.6	22.8	19.8	9.6	8.0	15.8
Mean (±0.53)	13.5	15.6	13.4	5.8	4.8	10.6
2ND PERIOD (CUTS 4-7)						
	(±1.61)					(±0.72)
NO	25.1	11.8	11.1	27.0	27.7	20.5
N1	41.5	18.4	23.2	40.8	42.3	33.2
N2	49.9	23.9	27.6	51.6	55.3	41.6
Mean (±0.93)	38.8	18.0	20.6	39.8	41.8	31.8
3RD PERIOD (CUTS 8-11)						
	(±1.71)					(±0.76)
NO	21.2	21.9	22.2	14.0	12.8	18.4
N1	30.1	30.7	34.0	16.5	18.6	26.0
N2	36.6	40.8	43.5	22.6	24.0	33.5
Mean (±0.99)	29.3	31.1	33.3	17.7	18.5	26.0

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GRASS. DRY MATTER

MOWER SCYTHE

	HH	HG-	HG+	H-G	H+G	Mean
4TH PERIOD (CUTS 12-14)						
	(±0.99)					(±0.44)
NO	3.7	4.6	3.6	6.8	8.8	5.5
N1	13.1	7.6	6.1	12.9	17.9	11.5
N2	17.9	9.0	8.5	23.8	22.0	16.3
Mean (±0.57)	11.6	7.1	6.1	14.5	16.2	11.1
TOTAL OF ALL 4 PERIODS (ALL CUTS)						
	(±3.13)					(±1.40)
NO	56.4	46.0	42.9	50.8	50.9	49.4
N1	100.2	72.9	77.8	74.8	83.6	81.9
N2	123.0	96.5	99.4	107.7	109.3	107.2
Mean (±1.81)	93.2	71.8	73.4	77.8	81.3	79.5

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GRASS. DRY MATTER
MOWER SCYTHE, CAGES AND FRAMES

	A	C	F	Mean
1ST PERIOD (CUTS 1-3)				
Mean (± 0.58)	9.1	22.2	21.2	17.5
	(1) and (2)			(± 0.97)
NO	3.8	14.7	13.3	10.6
N1	9.7	22.6	22.8	18.4
N2	13.9	29.3	27.5	23.6
	(3) and (4)			(± 0.79)
HG+	13.4	21.1	19.6	18.0
G+H	4.8	23.4	22.8	17.0

(1) (± 1.27) (3) (± 1.04) For use in vertical and diagonal comparisons
 (2) (± 1.01) (4) (± 0.82) For use in horizontal and interaction comparisons

2ND PERIOD (CUTS 4-7)				
Mean (± 0.78)	31.2	43.9	44.4	39.8
	(1) and (2)			(± 1.12)
NO	19.4	31.2	30.8	27.1
N1	32.7	47.2	47.3	42.4
N2	41.4	53.4	55.1	50.0
	(3) and (4)			(± 0.91)
HG+	20.6	42.2	43.4	35.4
G+H	41.8	45.6	45.4	44.3

(1) (± 1.57) (3) (± 1.28) For use in vertical and diagonal comparisons
 (2) (± 1.35) (4) (± 1.10) For use in horizontal and interaction comparisons

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GRASS. DRY MATTER
MOWER SCYTHE, CAGES AND FRAMES

	A	C	F	Mean
3RD PERIOD (CUTS 8-11)				
Mean (± 0.56)	25.9	36.4	36.9	33.1
	(1) and (2)			(± 0.98)
NO	17.5	28.9	26.7	24.3
N1	26.3	38.2	40.2	34.9
N2	33.8	42.2	44.0	40.0
	(3) and (4)			(± 0.80)
HG+	33.3	37.6	39.0	36.6
G+H	18.5	35.2	34.9	29.5

(1) (± 1.26) (3) (± 1.03) For use in vertical and diagonal comparisons
 (2) (± 0.97) (4) (± 0.79) For use in horizontal and interaction comparisons

4TH PERIOD (CUTS 12-14)				
Mean (± 0.50)	3.5	19.3	18.0	13.6
	(1) and (2)			(± 0.85)
NO	2.1	15.6	13.6	10.4
N1	3.6	18.5	17.2	13.1
N2	4.9	23.9	23.4	17.4
	(3) and (4)			(± 0.70)
HG+	6.1	17.0	14.9	12.6
G+H	1.0	21.7	21.2	14.6

(1) (± 1.11) (3) (± 0.91) For use in vertical and diagonal comparisons
 (2) (± 0.87) (4) (± 0.71) For use in horizontal and interaction comparison

67/c/38.7

GRASS. DRY MATTER

MOWER SCYTHE, CAGES AND FRAMES

	A	C	F	Mean
TOTAL OF ALL PERIODS (ALL CUTS)				
Mean (± 1.23)	77.3	121.9	120.6	106.6
		(1) and (2)		(± 2.63)
NO	46.9	90.3	84.5	73.9
N1	80.7	126.5	127.4	111.5
N2	104.3	148.8	150.0	134.4
		(3) and (4)		(± 2.15)
HG+	73.4	117.9	116.9	102.7
G+H	81.3	125.8	124.4	110.5

(1) (± 3.15) (3) (± 2.58) For use in vertical and diagonal comparisons

(2) (± 2.13) (4) (± 1.74) For use in horizontal and interaction comparisons