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## Details of the Classical and Long-term Experiments 1968-73

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### R/CS/13 N Levels to Old Grass - Grass

#### Rothamsted Research

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## NITROGEN LEVELS TO OLD GRASS ROTHAMSTED PARK GRASS

(R/CS/13)

This experiment, started in 1965, studies the effects of a range of nitrogen rates on yield and botanical composition of very old permanent pasture given a single dressing of P and K annually. The contribution of legumes to the productivity of the sward is studied by spraying half of the N0 plots with weedkillers. The effects of treatments on nutrients available in the soil are also studied. From 1965-69 the effects of 3 and 6 applications of N and grass cuts were measured. From 1970 the N was applied in four equal dressings, one for each cut. The effect of Mg on Mg content of the herbage was also studied for 1970 and 1971. The experiment is located on plot 6/1 of the Park Grass Experiment which received P, K, Na, Mg annually 1869-1964 after N only (96 kg N) 1856-68.

### Design

4 randomised blocks of 10 plots. The magnesium treatments 1970 and 1971 and the extra N treatments from 1972 were arranged on the original treatments:—

#### Treatments 1965-69

Cuts			3					6		
Total N	0	0 <sup>x</sup>	1	2	3	0	0 <sup>x</sup>	1	2	3

#### Treatments 1970-71

Cuts			4					4		
Total N	0	0 <sup>x</sup>	1	2	3	0	0 <sup>x</sup>	1	2	3

#### Mg level

Blocks I & II	1	1	2	1	2	2	2	1	2	1
Blocks III & IV	2	2	1	2	1	1	1	2	1	2

#### Treatments 1972-

Cuts			4					4		
Total N	0	0 <sup>x</sup>	1	3	5	0	0 <sup>x</sup>	2	4	6

<sup>x</sup> Plots treated with mecoprop to eliminate clovers.

### Treatments

(1) *Nitrogen* (kg N per annum as 'Nitro-Chalk')

No. of cuts	1965-71		1972-	
	None	(N0)	None	(N0)
(A)	145	(N1)	75	(N1)
(A)	290	(N2)	225	(N3)
(A)	435	(N3)	375	(N5)
(B)	145	(N1)	150	(N2)
(B)	290	(N2)	300	(N4)
(B)	435	(N3)	450	(N6)
(A) 1965 & 1966 1967	3 cuts/annum, N applied equally for each. 3 cuts/annum, N applied in 6 equal dressings.			

1968 & 1969 6 cuts/annum, N applied in 3 equal dressings  
for first, third and fifth cuts.  
(B) 1965-69 6 cuts/annum, N applied equally for each.  
(A) and (B)  
From 1970 4 cuts/annum, N applied equally for each.

(2) *Control of legumes*

Two plots per block receiving no N are sprayed with mecoprop, once annually 1965, 1967 and 1969 and twice 1966, 1968 and 1970-73.

(3) *Magnesium*

1970 and 1971 28 kg Mg v. 56 kg Mg each year as magnesium sulphate.

**Basal applications**

1965- 34 kp P as superphosphate, 224 kg K as potassium sulphate.

1965-69 16 kg Na as sodium sulphate.

1965-69,

1972 & 1973 11 kg Mg as magnesium sulphate.

**Liming (as ground chalk)**

1965 8.7 t

1968 7.5 t

1970 2.9 t

**Plot areas harvested** 0.00086 – 0.00090

**Soil series** Batcombe series.