

Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readable, or you suspect there are some problems, please let us know and we will correct that.



ROTHAMSTED  
RESEARCH

## Yields of the Field Experiments 1997

[Full Table of Content](#)



---

### 97/R/PG/5 Park Grass - Old Grass

#### Rothamsted Research

Rothamsted Research (1998) *97/R/PG/5 Park Grass - Old Grass* ; Yields Of The Field Experiments 1997, pp 27 - 32 - DOI: <https://doi.org/10.23637/ERADOC-1-53>

97/R/PG/5

PARK GRASS

**Object:** To study the effects of organic and inorganic manures and lime on old grass for hay.

The 142nd year, hay.

For previous years see 'Details' 1977 and 1973 and 74-96/R/PG/5.

**Treatments:** Combinations of:-

Whole plots

<b>1. MANURE</b>	<b>Fertilizers and organic manures:</b>	
N1	Plot 1	N1
K	Plot 2/1	K since 1996 (as 2/2 before)
O(D)	Plot 2/2	None (D until 1863)
O	Plot 3	None
P	Plot 4/1	P
N2P	Plot 4/2	N2 P
N1MN	Plot 6	N1 P K Na Mg
MN	Plot 7	P K Na Mg
PNAMG	Plot 8	P Na Mg
MN(N2)	Plot 9/1	P K Na Mg (N2 until 1989)
N2MN	Plot 9/2	N2 P K Na Mg
N2PNAMG	Plot 10	N2 P Na Mg
N3MN	Plot 11/1	N3 P K Na Mg
N3MNSI	Plot 11/2	N3 P K Na Mg Si
O	Plot 12	None
(D/F)	Plot 13/1	None (D/F until 1994)
D/F	Plot 13/2	D/F
MN(N2*)	Plot 14/1	P K Na Mg (N2* until 1989)
N2*MN	Plot 14/2	N2* P K Na Mg
MN(N2*)	Plot 15	P K Na Mg (N2* until 1875)
N1*MN	Plot 16	N1* P K Na Mg
N1*	Plot 17	N1*
N2KNAMG	Plot 18	N2 K Na Mg
D	Plot 19	D
D/N*PK	Plot 20	D/N*P K
N1, N2, N3:	48, 96, 144 kg N as sulphate of ammonia	
N1*, N2*:	48, 96 kg N as nitrate of soda (30 kg N to plot 20, only in years with no farmyard manure)	
P:	35 kg P (15 kg P to plot 20, only in years with no farmyard manure) as triple superphosphate in 1974 and since 1987, single superphosphate in other years	
K:	225 kg K (45 kg K to plot 20, only in years with no farmyard manure) as sulphate of potash	
Na:	15 kg Na as sulphate of soda	
Mg:	10 kg Mg as sulphate of magnesia	
Si:	Silicate of soda at 450 kg	
D:	Farmyard manure at 35 t every fourth year	
F:	Fishmeal every fourth year to supply 63 kg N	
MN:	P K Na Mg as above	

97/R/PG/5

Sub-plots

2. LIME Liming plots 1-17:

- A a Ground chalk applied as necessary to achieve pH7
- B b Ground chalk applied as necessary to achieve pH6
- C c Ground chalk applied as necessary to achieve pH5
- D d None

NOTE: Lime was applied regularly at the same rate, to all 'a' and 'b' sub-plots of plots 1 to 17 (except 12) from 1924. Differential liming started in 1975 on certain 'b' and 'c' sub-plots (except on plot 12) and in 1976 on certain 'a' sub-plots (including plot 12) and 12b. Lime last applied in 1997.

Liming plots 18-20:

Differential rates of lime were applied to sub-plots 2 and 3 regularly 1920-1974. Since 1975 plot 18-1 has been split into two for treatments 'c' and 'd' above and plot 18-3 split into two for treatments 'a' and 'b'. Plots 19 and 20 received no further chalk after 1978; plot 18/2 no further chalk after 1972.

Chalk applied 1997 (tonnes Ca CO<sub>3</sub>):

Plot	a	b	c
1	3.0	1.5	1.5
2/1	3.0	0.8	0.3
2/2	3.0	0.8	0.3
3	3.0	0.8	-
4/1	3.0	0.8	0.3
4/2	5.1	3.6	2.1
6	3.0	1.5	-
7	3.0	0.8	0.3
8	3.0	0.8	0.3
9/1	6.0	1.5	1.5
9/2	10.2	3.6	2.1
10	10.2	7.2	4.2
11/1	12.0	4.5	6.0
11/2	12.0	4.5	3.0
12	3.0	-	-
13/1	3.0	-	-
13/2	3.0	-	-
14/1	3.0	-	-
14/2	2.2	-	-
15	3.0	0.8	0.3
16	2.2	-	-
17	2.2	-	-
18	5.1	3.6	2.1

None applied to plots 18/2, 19 and 20. This was the second application in a triennial scheme of soil pH analyses and chalk applications.

97/R/PG/5

**Experimental diary:**

26-Nov-96 : T : (Not plot 20) P applied.  
10-Dec-96 : T : (Not plot 20) K, Na, Mg and Si applied.  
11-Dec-96 : T : Plot 20: P and K applied.  
07-Jan-97 : T : Chalk application started.  
29-Jan-97 : T : Farmyard manure applied.  
31-Jan-97 : T : Chalk application finished.  
09-Apr-97 : T : Sulphate of ammonia applied.  
10-Apr-97 : T : Nitrate of soda applied.  
07-Jul-97 : B : Cut.  
09-Jul-97 : B : Hay turned twice.  
10-Jul-97 : B : Hay rowed up and baled.  
10-Nov-97 : B : Cut and herbage removed.

**NOTE:** Samples of herbage from selected plots were taken for chemical analysis. Unground herbage samples from all plots from both cuts were archived.

97/R/PG/5

1ST CUT (8/7/97) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

	LIME	A	B	C	D	MEAN
	MANURE					
N1	1	2.68	2.98	2.12	0.87	2.16
K	2/1	1.68	2.37	1.46	1.75	1.82
O(D)	2/2	1.94	2.51	1.51	1.84	1.95
O	3	1.84	1.89	1.75	2.13	1.90
P	4/1	2.08	2.65	2.51	2.94	2.55
N2P	4/2	2.29	2.37	3.06	1.90	2.40
N1MN	6	3.10	3.11			3.11
MN	7	3.17	2.63	3.16	2.08	2.76
PNAMG	8	2.06	2.59	2.57	2.46	2.42
MN(N2)	9/1	2.65	2.79	1.38	0.95	1.94
N2MN	9/2	3.21	3.54	2.80	3.03	3.15
N2PNAMG	10	2.55	2.50	2.82	2.03	2.47
N3MN	11/1	3.52	3.59	2.59	3.70	3.35
N3MNSI	11/2	4.12	3.27	2.81	3.94	3.54
O	12	1.64	1.60	1.40	1.44	1.52
(D/F)	13/1	2.22	2.43	2.87	2.76	2.57
D/F	13/2	3.05	4.57	4.79	4.61	4.26
MN(N2*)	14/1	2.71	2.92	2.65	2.43	2.68
N2*MN	14/2	3.42	2.99	3.19	3.67	3.32
MN(N2*)	15	2.74	2.79	2.22	2.39	2.54
N1*MN	16	3.48	3.26	3.61	3.40	3.43
N1*	17	2.79	3.17	3.06	3.30	3.08
N2KNAMG	18/1			3.40	0.98	2.19
N2KNAMG	18/2					3.94
N2KNAMG	18/3	2.89	3.74			3.31
D	19/1					5.47
D	19/2					4.80
D	19/3					4.43
D/N*PK	20/1					4.69
D/N*PK	20/2					4.31
D/N*PK	20/3					4.40

1ST CUT MEAN DM% 31.3

97/R/PG/5

2ND CUT (11/11/97) DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

	LIME	A	B	C	D	MEAN
	MANURE					
N1	1	1.13	1.49	1.00	0.37	1.00
K	2/1	1.28	1.66	1.60	1.57	1.53
O(D)	2/2	0.71	1.01	0.86	0.87	0.86
O	3	0.73	0.75	1.07	1.30	0.96
P	4/1	0.79	1.13	1.33	1.29	1.14
N2P	4/2	1.10	1.28	0.76	0.74	0.97
N1MN	6	0.83	0.82			0.83
MN	7	0.90	1.08	1.53	0.70	1.05
PNAMG	8	1.14	1.02	1.18	0.96	1.07
MN(N2)	9/1	0.92	0.78	0.47	0.43	0.65
N2MN	9/2	0.85	1.04	0.62	0.90	0.85
N2PNAMG	10	0.91	1.09	0.82	0.66	0.87
N3MN	11/1	0.95	0.83	0.64	1.39	0.95
N3MNSI	11/2	1.14	1.18	0.70	1.53	1.14
O	12	0.88	0.91	0.97	0.80	0.89
(D/F)	13/1	1.25	1.20	1.59	1.25	1.32
D/F	13/2	1.64	2.49	2.08	1.89	2.02
MN(N2*)	14/1	0.92	0.90	0.80	0.93	0.89
N2*MN	14/2	1.30	1.05	1.16	1.14	1.16
MN(N2*)	15	1.26	1.19	1.12	0.92	1.12
N1*MN	16	1.44	1.25	1.48	1.13	1.33
N1*	17	1.19	1.38	1.52	1.64	1.43
N2KNAMG	18/1			0.42	0.13	0.27
N2KNAMG	18/2					0.98
N2KNAMG	18/3	0.62	0.96			0.79
D	19/1					1.25
D	19/2					1.41
D	19/3					1.19
D/N*PK	20/1					1.20
D/N*PK	20/2					0.79
D/N*PK	20/3					0.93

2ND CUT MEAN DM% 28.2

97/R/PG/5

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

	LIME	A	B	C	D	MEAN
	<b>MANURE</b>					
N1	1	3.81	4.47	3.12	1.23	3.16
K	2/1	2.96	4.03	3.06	3.33	3.34
O(D)	2/2	2.65	3.52	2.37	2.70	2.81
O	3	2.57	2.64	2.81	3.43	2.86
P	4/1	2.88	3.78	3.85	4.23	3.68
N2P	4/2	3.39	3.66	3.82	2.64	3.37
N1MN	6	3.94	3.94			3.94
MN	7	4.07	3.72	4.69	2.79	3.82
PNAMG	8	3.20	3.61	3.75	3.42	3.49
MN(N2)	9/1	3.57	3.57	1.84	1.38	2.59
N2MN	9/2	4.05	4.58	3.42	3.94	4.00
N2PNAMG	10	3.45	3.58	3.64	2.69	3.34
N3MN	11/1	4.47	4.41	3.23	5.09	4.30
N3MNSI	11/2	5.26	4.45	3.50	5.48	4.67
O	12	2.52	2.52	2.37	2.24	2.41
(D/F)	13/1	3.47	3.63	4.46	4.01	3.89
D/F	13/2	4.69	7.06	6.87	6.50	6.28
MN(N2*)	14/1	3.63	3.82	3.44	3.36	3.56
N2*MN	14/2	4.73	4.04	4.35	4.81	4.48
MN(N2*)	15	3.99	3.98	3.34	3.31	3.66
N1*MN	16	4.92	4.50	5.09	4.53	4.76
N1*	17	3.98	4.55	4.58	4.94	4.51
N2KNAMG	18/1			3.82	1.11	2.46
N2KNAMG	18/2					4.92
N2KNAMG	18/3	3.51	4.70			4.10
D	19/1					6.72
D	19/2					6.21
D	19/3					5.62
D/N*PK	20/1					5.89
D/N*PK	20/2					5.11
D/N*PK	20/3					5.34

TOTAL OF 2 CUTS MEAN DM% 29.7