ROTHAMSTED RESEARCH

Yields of the Field Experiments 1995

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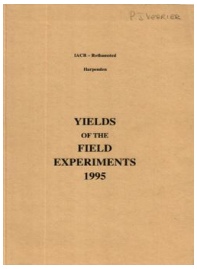

95/R/PG/5 Park Grass - Old Grass

Rothamsted Research

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95/R/PG/5

PARK GRASS

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

The 140th year, hay.

For previous years see 'Details' 1967 and 1973 and 74-94/R/PG/5.

Treatments: Combinations of:-

Whole plots

1. **MANURE** Fertilizers and organic manures:

N1	Plot 1	N1
O(D)	Plot 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

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95/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, and at the same rate, to all 'a' and 'b' sub-plots of Plots 1 to 17 (except 12) from 1924. Differential liming started in 1965 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 1994.

Liming plots 18-20:

Differential rates of lime were applied to sub-plots 2 and 3 regularly 1920-1964. Since 1965 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 1968; plot 18/2 no further chalk after 1972.

For 1995 plot 13 was split in two, 13/1 to receive no more manure, 13/2 to receive organic manures as hitherto.

For a fuller record of treatments see 'Details' etc.

Experimental diary:

02-Dec-94	**T**	P applied, except plot 20.
14-Dec-94	**T**	K, Na, Mg, Si and fishmeal applied.
	T	Plot 20: P applied.
27-Apr-95	**T**	N applied.
21-Jun-95	B	Cut.
22-Jun-95	B	Hay turned.
23-Jun-95	B	Hay turned, rowed up and baled.
25-Oct-95	B	Cut and herbage removed.

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95/R/PG/5

1ST CUT (21/6/95) DRY MATTER TONNES/HECTARE

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

LIME / MANURE		A	B	C	D	MEAN
N1	1	2.39	2.31	2.16	0.60	1.86
O(D)	2	2.01	2.31	1.81	1.63	1.94
O	3	2.10	1.98	1.33	1.30	1.68
P	4/1	2.51	3.21	2.28	2.12	2.53
N2P	4/2	2.31	2.81	2.07	1.09	2.07
N1MN	6	3.61	3.10			3.36
MN	7	3.24	3.61	3.54	1.96	3.09
PNAMG	8	1.99	2.53	2.08	1.92	2.13
MN(N2)	9/1	2.97	1.77	0.83	0.45	1.50
N2MN	9/2	3.93	3.38	2.19	1.45	2.74
N2PNAMG	10	2.95	2.75	1.93	1.37	2.25
N3MN	11/1	5.43	4.60	3.24	3.40	4.17
N3MNSI	11/2	5.37	4.15	3.54	3.26	4.08
O	12	1.46	1.54	1.20	1.12	1.33
(D/F)	13/1	2.85	3.23	2.46	2.54	2.77
D/F	13/2	3.33	4.34	4.34	3.68	3.92
MN(N2*)	14/1	3.77	3.40	2.79	2.63	3.15
N2*MN	14/2	5.55	4.74	5.04	5.15	5.12
MN(N2*)	15	3.64	4.63	2.80	2.22	3.32
N1*MN	16	4.00	4.37	4.00	3.43	3.95
N1*	17	2.29	2.49	2.66	2.69	2.53
N2KNAMG0	18/1			1.98	0.10	1.04
N2KNAMG2	18/2					2.58
N2KNAMG1	18/3	2.41	2.47			2.44
D0	19/1					3.14
D2	19/2					3.82
D1	19/3					3.40
D/N*PK0	20/1					4.14
D/N*PK2	20/2					4.67
D/N*PK1	20/3					4.68

1ST CUT MEAN DM% 29.4

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2ND CUT (25/10/95) DRY MATTER TONNES/HECTARE

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

LIME / MANURE		A	B	C	D	MEAN
N1	1	0.50	0.33	0.09	0.00	0.23
O(D)	2	0.05	0.12	0.13	0.25	0.14
O	3	0.07	0.07	0.12	0.27	0.13
P	4/1	0.18	0.23	0.38	0.39	0.30
N2P	4/2	0.65	0.64	0.17	0.07	0.38
N1MN	6	0.57	0.56			0.56
MN	7	0.87	0.98	0.68	0.43	0.74
PNAMG	8	0.35	0.40	0.40	0.38	0.38
MN(N2)	9/1	0.48	0.22	0.02	0.04	0.19
N2MN	9/2	1.00	0.80	0.18	0.27	0.56
N2PNAMG	10	0.30	0.68	0.30	0.27	0.39
N3MN	11/1	1.52	1.06	0.47	0.20	0.81
N3MNSI	11/2	1.83	1.47	0.74	0.29	1.08
O	12	0.04	0.08	0.24	0.29	0.16
(D/F)	13/1	0.67	0.80	0.31	0.56	0.58
D/F	13/2	0.72	1.05	0.66	0.77	0.80
MN(N2*)	14/1	0.48	0.63	0.32	0.30	0.43
N2*MN	14/2	1.45	1.64	1.81	1.96	1.72
MN(N2*)	15	0.57	0.65	0.37	0.44	0.51
N1*MN	16	0.89	0.95	0.68	0.64	0.79
N1*	17	0.27	0.26	0.45	0.60	0.39
N2KNAMG0	18/1			0.27	0.00	0.14
N2KNAMG2	18/2					0.65
N2KNAMG1	18/3	0.37	0.58			0.47
D0	19/1					0.82
D2	19/2					0.85
D1	19/3					0.58
D/N*PK0	20/1					1.01
D/N*PK2	20/2					1.22
D/N*PK1	20/3					0.96

2ND CUT MEAN DM% 22.6

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TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

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

LIME / MANURE		A	B	C	D	MEAN
N1	1	2.89	2.63	2.25	0.60	2.09
O(D)	2	2.06	2.44	1.94	1.88	2.08
O	3	2.17	2.05	1.45	1.57	1.81
P	4/1	2.70	3.44	2.66	2.51	2.83
N2P	4/2	2.96	3.45	2.25	1.16	2.46
N1MN	6	4.17	3.66			3.92
MN	7	4.12	4.59	4.22	2.39	3.83
PNAMG	8	2.33	2.93	2.48	2.30	2.51
MN(N2)	9/1	3.45	1.99	0.85	0.49	1.69
N2MN	9/2	4.93	4.18	2.38	1.71	3.30
N2PNAMG	10	3.25	3.43	2.22	1.64	2.64
N3MN	11/1	6.95	5.65	3.71	3.60	4.98
N3MNSI	11/2	7.19	5.62	4.28	3.55	5.16
O	12	1.50	1.62	1.43	1.41	1.49
(D/F)	13/1	3.51	4.03	2.77	3.10	3.35
D/F	13/2	4.05	5.39	5.00	4.46	4.73
MN(N2*)	14/1	4.25	4.03	3.10	2.93	3.58
N2*MN	14/2	7.00	6.38	6.85	7.11	6.84
MN(N2*)	15	4.21	5.28	3.16	2.66	3.83
N1*MN	16	4.89	5.32	4.68	4.07	4.74
N1*	17	2.56	2.75	3.10	3.28	2.92
N2KNAMG0	18/1			2.25	0.10	1.17
N2KNAMG2	18/2					3.24
N2KNAMG1	18/3	2.78	3.06			2.92
D0	19/1					3.95
D2	19/2					4.67
D1	19/3					3.98
D/N*PK0	20/1					5.14
D/N*PK2	20/2					5.89
D/N*PK1	20/3					5.64

TOTAL OF 2 CUTS MEAN DM% 26.1

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