ROTHAMSTED RESEARCH

Yields of the Field Experiments 2011

Full Table of Content

R/PG/5 Park Grass

Rothamsted Research

Rothamsted Research (2012) *R/PG/5 Park Grass ;* Yields Of The Field Experiments 2011, pp 28 - 33 **- DOI: https://doi.org/10.23637/ERADOC-1-221**

11/R/PG/5

PARK GRASS

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

The 156th year, hay.

For previous years see 'Details' 1977 and 1973 and Yield Books for 74-10/R/PG/5.

Treatments: Combinations of:-

Whole plots

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

N1	Plot 1	N1
K	Plot 2/1	K since 1996 (as 2/2 before)
None (FYM)	Plot 2/2	None (FYM until 1863)
None	Plot 3	None
P	Plot 4/1	P
N2P	Plot 4/2	N2 P
N1PKNaMg	Plot 6	N1 P K Na Mg
PKNaMg	Plot 7	P K Na Mg
PNaMg	Plot 8	P Na Mg
PKNaMg(N2)	Plot 9/1	P K Na Mg (+ N2 until 1989)
N2PKNaMg	Plot 9/2	N2 P K Na Mg
N2PNaMg	Plot 10	N2 P Na Mg
N3PKNaMg	Plot 11/1	N3 P K Na Mg
N3PKNaMgSi	Plot 11/2	N3 P K Na Mg Si
None	Plot 12	None
(FYM/F)	Plot 13/1	None (FYM/F until 1993/1995)
FYM/PM	Plot 13/2	FYM/PM (FYM/F until 1999)
PKNaMg (N2*)	Plot 14/1	P K Na Mg (+ N2* until 1989)
N2*PKNaMg	Plot 14/2	N2* P K Na Mg
PKNaMg (N2*)	Plot 15	P K Na Mg (N2* until 1875)
N1*PKNaMg	Plot 16	N1* P K Na Mg
N1*	Plot 17	N1*
N2KNaMg	Plot 18	N2 K Na Mg
FYM	Plot 19	FYM
FYM/N*PK	Plot 20	FYM/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 in years with no farmyard manure)
P:	35 kg P (15 kg P to plot 20 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 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
FYM:	Farmyard manure at 35 t every fourth year

https://doi.org/10.23637/ERADOC-1-221

11/R/PG/5

1. Manure, fertilisers and organic manures (cont'd)

F:	Fishmeal every fourth year to supply 63 kg N (stopped 1999; replaced by PM)
PM	Pelleted poultry manure at 2 t, every fourth year to supply 63 kg N (started 2003)

Sub-plots

2. **Lime** Liming plots 1-18 (excluding 18/2):

a	Ground chalk applied as necessary to achieve pH7
b	Ground chalk applied as necessary to achieve pH6
c	Ground chalk applied as necessary to achieve pH5
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 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 was applied in 2008-2009; the sixth application in a triennial scheme of soil pH analysis and remedial chalk applications.

[This note was incorrect in 97-01/R/PG/5 Yield book entries.]

Lime Liming plots 18-20

NOTE: Differential rates of lime were applied to sub-plots 2 and 3 regularly 1920-1964. Since 1975 plot 18-1 has been split into two for treatments 'c' and 'd' as 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.

[This note was incorrect in 97-01/R/PG/5 Yield book entries.]

https://doi.org/10.23637/ERADOC-1-221

11/R/PG/5

Experimental diary

			Rate	Unit
29-Nov-10	f	Applied Triple Super Phosphate - As treatment (see plan for details)	171	kg/ha
29-Nov-10	f	Applied Triple Super Phosphate - As treatment (see plan for details)	73	kg/ha
19-Jan-11	a	Removed fallen branch		
09-Feb-11	f	Applied Potassium Sulphate - Plots 6, 7, 9-1, 9-2, 11-1, 14-1, 14-2, 15, 16, 18 and 20 only	542	kg/ha
09-Feb-11	f	Applied Soduim Sulphate - Plots 6, 7, 9-1, 9-2, 11-1, 14-1, 14-2, 15, 16 and 18 only	43	kg/ha
09-Feb-11	f	Applied Magnesium Sulphate - Plots 6, 7, 9-1, 9-2, 11-1, 14-1, 14-2, 15, 16 and 18 only	111	kg/ha
24-Feb-11	f	Applied Soduim Sulphate - plots 8,10 and 11-2	43	kg/ha
24-Feb-11	f	Applied Magnesium Sulphate - plots 8,10 and 11-2	111	kg/ha
24-Feb-11	f	Applied Potassium Sulphate - plot 11-2	542	kg/ha
24-Feb-11	f	Applied silicate of soda - plot 11-2	450	kg/ha
25-Feb-11	f	Applied Potassium Sulphate - plots 2-1 and 20 (plot 20 received a total of 542 kg/ha in two applications on Feb 9 & 25.	542	kg/ha
24-Mar-11	f	Applied Ammonium Sulphate Fertiliser - See plan for details of treatments		
24-Mar-11	f	Applied Sodium Nitrate - See plan for details of treatments		
25-Mar-11	a	Applied Poultry manure - To plot 13/2	2	t/ha
13-Apr-11	p	Phostoxin - Gassed moles		
18-Apr-11	a	Cut surrounds - Cut round trial		
19-Apr-11	a	Cut paths		
04-May-11	a	Cut around edge of trial		
05-May-11	a	Cut paths		
17-May-11	a	Cut paths		
25-May-11	a	Cut around edge of trial		
08-Jun-11	a	Cut paths		
22-Jun-11	a	Cut yields - to finish		
23-Jun-11	a	Cut yields - 1st Cut yields.		
23-Jun-11	a	Cut discards		
23-Jun-11	a	Turned grass - Hay making		
24-Jun-11	a	Turned hay - Turned twice		
24-Jun-11	a	Rowed up hay		
24-Jun-11	a	Baled by contractor and removed.		
29-Jun-11	a	Cut paths		
30-Jun-11	a	Put out marker posts		
01-Aug-11	a	Cut paths		
03-Nov-11	a	Cut paths		

https://doi.org/10.23637/ERADOC-1-221

21-Nov-11	a	Cut yields - 2nd cut, herbage weighed and sampled
22-Nov-11	a	Cut yields - 2nd cut. herbage weighed and sampled; finished
22-Nov-11	a	Cut and baled - removed grass

1ST CUT (22-24/6/11) DRY MATTER TONNES/HECTARE

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

Grand mean 2.87

	Manure	Lime	a	b	c	d	Mean
N1	1		2.04	1.28	0.96	0.81	1.27
K	2/1		1.06	1.32	0.42	0.38	0.80
None (FYM)	2/2		1.08	1.25	0.53	0.62	0.87
None	3		0.93	1.39	0.35	0.58	0.81
P	4/1		2.95	2.49	1.85	1.87	2.29
N2P	4/2		2.63	2.83	2.60	1.32	2.34
N1PKNaMg	6		4.75	4.81			4.78
PKNaMg	7		4.44	4.51	3.91	1.99	3.71
PNaMg	8		2.68	2.70	2.35	2.57	2.58
PKNaMg (N2)	9/1		4.00	4.23	2.59	0.69	2.88
N2PKNaMg	9/2		5.47	5.56	3.56	2.28	4.22
N2PNaMg	10		2.67	3.14	3.04	1.53	2.59
N3PKNaMg	11/1		6.18	4.80	4.91	2.35	4.56
N3PKNaMgSi	11/2		5.07	4.57	4.20	3.28	4.28
None	12		1.99	1.35	0.96	0.94	1.31
(FYM/F)	13/1		3.56	3.54	2.52	1.38	2.75
FYM/PM	13/2		4.28	5.07	3.66	3.29	4.08
PKNaMg (N2*)	14/1		3.95	3.91	3.93	4.25	4.01
N2*PKNaMg	14/2		4.67	4.41	4.10	3.46	4.16
PKNaMg (N2*)	15		4.55	4.24	4.19	1.75	3.68
N1*PKNaMg	16		5.01	5.45	4.83	3.59	4.72
N1*	17		1.83	1.74	1.48	1.84	1.72
N2KNaMg	18		1.35	1.74	1.65	0.61	1.34
N2KNaMg	18/2						2.56
FYM	19/1						2.73
FYM	19/2						3.68
FYM	19/3						3.16
FYM/N*PK	20/1						4.39
FYM/N*PK	20/2						3.97
FYM/N*PK	20/3						4.67

1ST CUT MEAN DM% 27.9

https://doi.org/10.23637/ERADOC-1-221

11/R/PG/5

2ND CUT (21-22/11/11) DRY MATTER TONNES/HECTARE

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

Grand Mean 1.14

	Manure	Lime	a	b	c	d	Mean
N1	1		1.02	0.77	0.76	0.74	0.82
K	2/1		0.76	0.56	0.48	0.44	0.56
None (FYM)	2/2		0.63	0.65	0.49	0.70	0.62
None	3		0.70	0.95	0.46	0.78	0.72
P	4/1		1.27	1.04	1.26	1.21	1.20
N2P	4/2		1.31	1.19	1.24	1.21	1.24
N1PKNaMg	6		0.84	0.81			0.83
PKNaMg	7		1.01	1.04	1.50	1.02	1.14
PNaMg	8		1.35	1.32	1.42	1.47	1.39
PKNaMg (N2)	9/1		1.16	1.31	1.04	0.32	0.96
N2PKNaMg	9/2		1.33	1.26	1.20	1.97	1.44
N2PNaMg	10		0.70	1.01	1.13	1.63	1.12
N3PKNaMg	11/1		1.41	1.07	1.04	2.72	1.56
N3PKNaMgSi	11/2		1.63	1.24	1.23	3.18	1.82
None	12		1.12	0.78	0.75	0.61	0.81
(FYM/F)	13/1		1.51	1.53	1.10	0.61	1.19
FYM/PM	13/2		1.52	2.19	2.01	1.65	1.84
PKNaMg (N2*)	14/1		0.94	1.10	1.34	1.44	1.21
N2*PKNaMg	14/2		0.94	1.01	0.95	1.32	1.06
PKNaMg (N2*)	15		1.01	1.19	1.42	1.01	1.16
N1*PKNaMg	16		1.27	1.44	1.70	1.28	1.42
N1*	17		1.04	1.13	0.93	1.18	1.07
N2KNaMg	18		0.73	0.81	0.91	0.29	0.68
N2KNaMg	18/2						1.15
FYM	19/1						1.32
FYM	19/2						1.34
FYM	19/3						1.11
FYM/N*PK	20/1						1.66
FYM/N*PK	20/2						1.32
FYM/N*PK	20/3						1.39

2ND CUT MEAN DM% 24.55

https://doi.org/10.23637/ERADOC-1-221

11/R/PG/5

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

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

Grand Mean 4.01

	Manure	Lime	a	b	c	d	Mean
N1	1		3.06	2.05	1.72	1.54	2.09
K	2/1		1.82	1.89	0.90	0.82	1.36
None (FYM)	2/2		1.71	1.90	1.02	1.31	1.49
None	3		1.63	2.34	0.81	1.36	1.54
P	4/1		4.21	3.53	3.12	3.09	3.49
N2P	4/2		3.94	4.02	3.85	2.54	3.58
N1PKNaMg	6		5.59	5.62			5.61
PKNaMg	7		5.45	5.56	5.41	3.01	4.86
PNaMg	8		4.03	4.02	3.76	4.04	3.96
PKNaMg (N2)	9/1		5.16	5.54	3.63	1.01	3.84
N2PKNaMg	9/2		6.80	6.83	4.76	4.25	5.66
N2PNaMg	10		3.37	4.15	4.17	3.16	3.71
N3PKNaMg	11/1		7.59	5.87	5.96	5.07	6.12
N3PKNaMgSi	11/2		6.70	5.81	5.43	6.46	6.10
None	12		1.10	2.13	1.71	1.54	2.12
(FYM/F)	13/1		5.07	5.07	3.62	1.99	3.94
FYM/PM	13/2		5.80	7.25	5.67	4.94	5.92
PKNaMg (N2*)	14/1		4.89	5.01	5.27	5.69	5.22
N2*PKNaMg	14/2		5.61	5.42	5.05	4.78	5.21
PKNaMg (N2*)	15		5.55	5.42	5.61	2.76	4.84
N1*PKNaMg	16		6.28	6.88	6.53	4.87	6.14
N1*	17		2.87	2.86	2.41	3.02	2.79
N2KNaMg	18		2.08	2.55	2.56	0.90	2.02
N2KNaMg	18/2						3.71
FYM	19/1						4.06
FYM	19/2						5.03
FYM	19/3						4.27
FYM/N*PK	20/1						6.06
FYM/N*PK	20/2						5.29
FYM/N*PK	20/3						6.06

TOTAL OF 2 CUTS MEAN DM% 26.25

https://doi.org/10.23637/ERADOC-1-221