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# Yields of the Field Experiments 2011

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Results of the  
Classical and other  
Long-term Experiments  
2011

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## R/PG/5 Park Grass

### Rothamsted Research

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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 156<sup>th</sup> 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.	<b>Manure</b>	Fertilizers and organic manures:
	N1	Plot 1
	K	Plot 2/1
	None (FYM)	Plot 2/2
	None	Plot 3
	P	Plot 4/1
	N2P	Plot 4/2
	N1PKNaMg	Plot 6
	PKNaMg	Plot 7
	PNaMg	Plot 8
	PKNaMg(N2)	Plot 9/1
	N2PKNaMg	Plot 9/2
	N2PNaMg	Plot 10
	N3PKNaMg	Plot 11/1
	N3PKNaMgSi	Plot 11/2
	None	Plot 12
	(FYM/F)	Plot 13/1
	FYM/PM	Plot 13/2
	PKNaMg (N2*)	Plot 14/1
	N2*PKNaMg	Plot 14/2
	PKNaMg (N2*)	Plot 15
	N1*PKNaMg	Plot 16
	N1*	Plot 17
	N2KNaMg	Plot 18
	FYM	Plot 19
	FYM/N*PK	Plot 20
	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



## 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 Sodium 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 Sodium 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		

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

**1<sup>ST</sup> 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



11/R/PG/5

2<sup>ND</sup> 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

2<sup>ND</sup> CUT MEAN DM% 24.55

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