



## Park Grass Experiment lime treatments 1856-2024

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**Date:** June 2025. This is Version 2 of the original dataset 1856-2021 (Glendining et al, 2021), with data for 2024 added. Minor update March 2026.

**Description:** Details of lime or chalk applied to the Park Grass permanent grassland experiment since the start of the experiment in 1856. Small amounts of ground chalk were applied to all plots in the 1880s and 1890s. A regular test of liming was started in 1903 when most plots were divided into two and lime applied every four years to one half. In 1965 a new liming scheme was started. Plots were divided into four sub-plots with ground chalk applied to maintain soil at pH 7, 6, and 5 on the 'a', 'b' and 'c' sub-plots. The 'd' sub-plot receives no lime.

- **Pages 1-2:** Cover Page
- **Pages 3:** General description of different lime/chalk treatments, and differences between plots.
- **Page 4:** Lime/chalk applications to each plot, 1856-1902
- **Page 5:** Plan of Park Grass in 1881, showing where chalk was applied to part of plots 1-13.
- **Pages 6-7:** Lime applications to each plot, 1903-1964
- **Pages 8-11:** Lime/chalk applications to each plot, 1965-2024

**Site:** R/PG/5. Park Grass, Rothamsted Experimental Farm, Rothamsted Research, West Common, Harpenden, Hertfordshire, AL5 2JQ, UK.  
Geolocation: 51.803812, -0.372097

### Derived from:

- Warren & Johnston (1964) *The Park Grass Experiment*, Rothamsted Report for 1963, pp 240-262. [10.23637/ERADOC-1-56](https://doi.org/10.23637/ERADOC-1-56)
- Rothamsted Experimental Station (1970) *Details of the Classical and Long-term Experiments up to 1967*, Harpenden 128 pp [10.23637/ERADOC-1-192](https://doi.org/10.23637/ERADOC-1-192)
- Rothamsted (1899) *Memoranda of the Origin, Plan and Results of the Field and other Experiments...at Rothamsted*.
- Macdonald et al (2018) *Guide to the Classical and other Long-term Experiments, Datasets and Sample Archive*. Rothamsted Research, Harpenden, UK [10.23637/ROTHAMSTED-LONG-TERM-EXPERIMENTS-GUIDE-2018](https://doi.org/10.23637/ROTHAMSTED-LONG-TERM-EXPERIMENTS-GUIDE-2018)
- Glendining, M.J., et al. (2021) *Park Grass Experiment lime treatments, 1856-2021*. *Electronic Rothamsted Archive, Rothamsted Research, Harpenden, UK* [10.23637/rpg5-LimeTreats-01](https://doi.org/10.23637/rpg5-LimeTreats-01)

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No lime applied 1856-1880

**Plots 1 - 4/2, 7 - 11/2, 13 and 16**

1881 lime applied to strip 10m wide on north side of the plot (except plot 16)

1883 plots halved and lime applied to western half, in 1887 lime applied to eastern half of plot.

Plots 11/1 and 11/2 received twice as much lime as the other plots.

1903 plots halved, lime applied regularly to the southern half (L), northern half remained unlimed (U).

1924 lime applied every 4 years to the southern half (L), northern half remained unlimed (U)

1965 plots divided into four sub-plots, a and b on the south side, previously limed, c and d on the north side, previously unlimed. No chalk applied to sub-plot d, differential amounts applied to sub-plots a, b and c, to maintain soil pH at 7, 6 and 5 respectively.

**Plots 5/1 and 5/2**

1881 lime applied to strip 10m wide on north side of the plot.

1883 plots halved and lime applied to western half, in 1896 lime applied to eastern half of plot, plus a further application to the whole plot. Plot 5 received twice as much lime as the other plots (except plot 11/1 and 11/2). No lime applied 1903 -1964.

From 1965 used for microplot experiments, and have remained outside the main experiment.

**Plot 6**

1881 lime applied to strip 10m wide on north side of plot 5/2.

1883 plots halved and lime applied to western half, in 1887 lime applied to eastern half of plot.

No lime applied 1903-1964. From 1965 - 1971 used for microplot experiments.

1972 onwards plots 6a and 6b received lime within the liming scheme.

**Plot 12**

1881 lime applied to strip 10m wide on north side of the plot.

1883 plots halved and lime applied to western half, in 1887 lime applied to eastern half of plot.

No lime applied 1903-1975; not included in the a, b, c, d scheme until 1976.

**Plots 14, 15 and 17**

1883 plots halved and lime applied to western half, in 1887 lime applied to eastern half of plot.

1920 plots halved and lime applied every 4 years to the southern half (L), northern half remained unlimed (U).

1965 plots 14 and 17 divided into four sub-plots, a and b on the south side, previously limed, c and d on the north side, previously unlimed. No chalk applied to sub-plot d, differential amounts applied to sub-plots a, b and c, to maintain soil pH at 7, 6 and 5 respectively.

**Plot 15** remained in limed and unlimed halves from 1920 - 1975, and was not fully included in the a, b, c, d scheme until 1976.

**Plots 18 - 20**

From 1920 plots 18, 19 and 20 were divided into three sub-plots to test different rates of lime:

Plot 18/1: Unlimed

Plot 18/2: 13.6 t/ha ground lime once every 4 years 1920-1964

Plot 18/3: 7.9 t/ha ground lime once every 4 years 1920-1964

Plot 19/1: Unlimed

Plot 19/2: 6.3 t/ha ground lime once every 4 years 1920-1964

Plot 19/3: 1.1 t/ha ground lime once every 4 years 1920-1964

Plot 20/1: Unlimed

Plot 20/2: 5.6 t/ha ground lime once every 4 years 1920-1964

Plot 20/3: 1.1 t/ha ground lime once every 4 years 1920-1964

**From 1965:**

Plot 18/1 was divided into 18c and 18d (previously unlimed) and included in a, b, c, d liming scheme.

Plot 18/3 was divided into 18a and 18b (previously limed) and included in a, b, c, d liming scheme.

Plots 18/2, 19/1, 19/2, 19/3, 20/1, 20/2, 20/3 are not included in the 1965 a, b, c, d liming scheme.

## Park Grass

Lime/chalk applications (t/ha CaCO<sub>3</sub>) 1856-1902

Plot	Plot half Treatment	Date applied	7th Jan 1881 <sup>(2)</sup>	26th Feb 1881 <sup>(3)</sup>	Nov 1883 <sup>(4)</sup> West	Nov 1887 <sup>(5)</sup> West	Nov 1887 <sup>(6)</sup> East	Dec 1896 <sup>(7)</sup> West	Dec 1896 <sup>(8)</sup> East	Total 1883-96 <sup>(9)</sup> West+East
		1	N1		2.2	1.1	4.0		4.0	
2	None since 1864		2.2	1.1	4.0		4.0			4.0
3	None		2.2	1.1	4.0		4.0			4.0
4/1	P		2.2	1.1	4.0		4.0			4.0
4/2	N2P		2.2	1.1	4.0		4.0			4.0
5 <sup>(1)</sup>	N2		2.2	1.1	4.0			4.0	8.0	8.0
6	PKNaMg		2.2	1.1	4.0		4.0			4.0
7	PKNaMg		2.2	1.1	4.0		4.0			4.0
8	PNaMg		2.2	1.1	4.0		4.0			4.0
9	N2PKNaMg		2.2	1.1	4.0		4.0			4.0
10	N2PNaMg		2.2	1.1	4.0		4.0			4.0
11/1	N3PKNaMg		2.2	1.1	4.0	4.0	8.0			8.0
11/2	N3PKNaMgSi		2.2	1.1	4.0	4.0	8.0			8.0
12	None		2.2	1.1	4.0		4.0			4.0
13	(N2PKNaMg) D/F		2.2	1.1	4.0		4.0			4.0
14	N*2PKNaMg				4.0		4.0			4.0
15	PKNaMg				4.0		4.0			4.0
16	N*1PKNaMg				4.0		4.0			4.0
17	N*1				4.0		4.0			4.0
18	N2KNaMg				4.0		4.0			4.0
19	(N*1PK) D				4.0		4.0			4.0
20	(N*1PK) D/N*PK				4.0		4.0			4.0

(1) Plot 5 divided into 5/1 and 5/2 in 1898

(2) Applied as coarsely broken chalk to 9.86m along the Northern end of plots 1-13

(3) Applied as finely ground chalk to 9.86m along the Northern end of plots 1-13

(4) Applied as slaked lime to the Western halves of plots 1-17 (including the 9.86m strip from 1881) and the Southern (probably) halves of plots 18-20

(5) Applied as slaked lime to the Western halves of plots 11/1 and 11/2 (including the 9.86m strip from 1881)

(6) Applied as slaked lime to the Eastern halves of plots 1-17 (including the 9.86m strip from 1881) and the Northern (probably) halves of plots 18-20. None to plot 5

(7) Applied as slaked lime to the Western half of plot 5 (including the 9.86m strip from 1881).

(8) Applied as slaked lime to the Eastern half of plot 5 (including the 9.86m strip from 1881).

(9) Total amount (t/ha, CaCO<sub>3</sub> equivalent) of slaked lime applied to each plot (overall total, Western and Eastern halves) between November 1883 and December 1896 (excludes the 3.3 t/ha CaCO<sub>3</sub> applied as chalk to the strip along the Northern edge of plots 1-13 in Jan/Feb 1881)

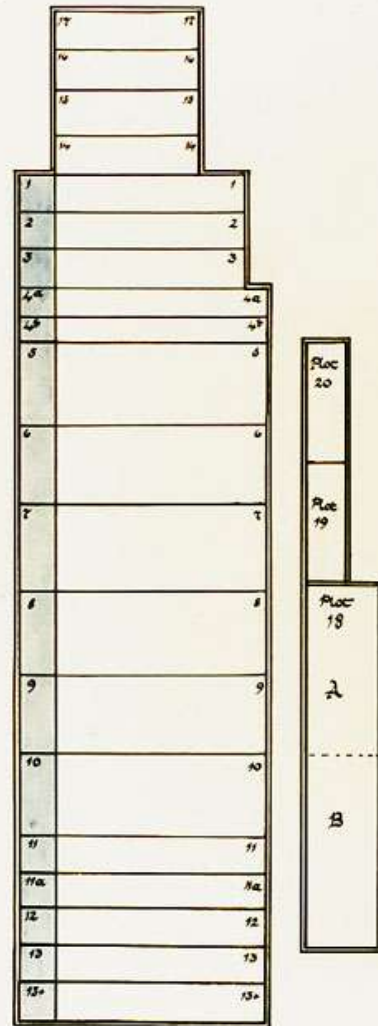
**Notes:** In January 1903 plots 1-13 and 14-17 were reduced in length by 1.52m at the Northern end to provide more turning room for the plots.

In 1906 plot 1 was reduced in length at the Southern end because of shading (see White Book for Park Grass, 1919-59, page 1)

For full details of amounts applied see "Memoranda of the Origin, Plan and Results of the Field and other Experiments....at Rothamsted:" 1899.

# PARK GRASS EXPERIMENTAL PLOTS

Season 1881.



Scale:  $\frac{1}{4}$  inch to 1 chain links chains

January 7<sup>th</sup> shaded portions of Plots 1 to 13 were chalked with 1820lb of sieved wet chalk mixed with 910lb of clay ashes. That is 2730lb of chalk and ashes were used over the total area.

Park Grass Lime/chalk applications (t/ha CaCO<sub>3</sub>) 1903-1964

Plot	Treatment	Season Half-plot	1903	1907	1915	1920	1924	1928	1932	1936	1940	1944	1948	1952	1956	1960	1964	Total	
1	N1	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00	
		U																	0.00
2	None since 1864	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
3	None	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
4/1	P	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
4/2	N2P	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
5/1	(N2) None																	0.00	
5/2	(N2) PK																	0.00	
6	PKNaMg																	0.00	
7	PKNaMg	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
8	PNaMg	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
9	N2PKNaMg	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
10	N2PNaMg	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
11/1	N3PKNaMg	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
11/2	N3PKNaMg Si	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
12	None																	0.00	
13	(N2PKNaMg) D/F	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00
14	N*2PKNaMg	L				5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	49.00
		U																	0.00
15	PKNaMg	L				5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	49.00
		U																	0.00
16	N*1PKNaMg	L	4.00	4.00	4.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	61.00
		U																	0.00

17	N*1	L	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	49.00
		U														0.00
18/1	N2KNaMg	U														0.00
18/2		HL	13.58	13.58	13.58	13.58	13.58	13.58	13.58	13.58	13.58	13.58	13.58	13.58	13.58	163.0
18/3		LL	7.90	7.90	7.90	7.90	7.90	7.90	7.90	7.90	7.90	7.90	7.90	7.90	7.90	94.80
19/1	D	U														0.00
19/2		HL	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	75.60
19/3		LL	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	13.68
20/1	D/N*PK	U														0.00
20/2		HL	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55	66.60
20/3		LL	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	13.68

**Notes:** In January 1903 plots 1-13 and 14-17 were reduced in length by 5 feet (1.52 m) at the Northern end to provide more turning room for the plots.  
In 1906 plot 1 was reduced in length at the Southern end because of shading (see White Book for Park Grass, 1919-59, page 1)

Most plots halved in 1903; Ground or slaked lime (equivalent to 4.0 t/ha CaCO<sub>3</sub>) was applied every 4 years (see above/below for exceptions) to half plots.

In 1903 the half-plots were designated as either Limed (L) [equivalent to current sub-plots "a" and "b"] or Unlimed (U) [equivalent to "c" and "d"]  
Plots 5/1, 5/2, 6, 12, 14, 15 and 17 were not divided at that time; plots 14, 15 and 17 were divided in 1920 and became part of the general scheme;  
plots 5/1, 5/2, 6 and 12 were not included in the general scheme.  
A different schedule was followed on plots 18, 19 and 20 starting in 1920; HL = High Lime, LL = Light Lime (see table for amounts added).

Applications were as ground or slaked lime except for the supplementary dressings of ground chalk on 3-4th January 1956 and applications in 1960 and 1964

Park Grass

Lime/chalk applications (t/ha CaCO<sub>3</sub>) since 1965

Plot	new_plot_id	Treatment	Season Sub-plot	1965	1967	1968	1972	1976	1990	1994	1997	2000	2003	2006	2009	2012	2015	2018	2021	2024	Total input 1965-2024	
<b>1</b>	1\L\a	N1	a			2.00	2.00	3.80	8.70	7.00	3.00	3.00	1.50	1.50	1.50	1.75	2.00	2.50	2.00	2.25	<b>44.50</b>	
	1\L\b		b						5.90	1.50	1.50	1.50	1.00	0.75	0.75	0.50	0.75	1.00	0.75	0.75	<b>16.65</b>	
	1\U\c		c	6.30	3.10	3.10			6.70	0.75	1.50	0.75	0.75	0.75	0.75	0.75	0.75	1.00	0.75	0.50	<b>28.20</b>	
	1\U\d		d																			<b>0.0</b>
<b>2/1</b>	2.1\L\a	Nil until 1995	a			2.00	2.00		6.40	7.00	3.00	3.00	1.50	0.75	1.00	1.50	1.00	1.50	1.50	1.75	<b>33.90</b>	
	2.1\L\b	K since 1996	b								0.75	0.75	1.00	0.75	1.00	0.75	0.75	0.75	0.75	0.50	<b>7.75</b>	
	2.1\U\c		c					1.00	0.30	0.30	0.30	0.30	0.30	0.30	0.50	0.30	0.30	0.30	0.30	0.00	<b>4.20</b>	
	2.1\U\d		d																		<b>0.0</b>	
<b>2/2</b>	2.2\L\a	Nil	a			2.00	2.00		6.40	7.00	3.00	3.00	1.50			0.30	0.30	0.50	0.30	0.50	<b>26.3</b>	
	2.2\L\b		b								0.75	0.75	0.75	0.30	0.50	0.30	0.30	0.50	0.30	0.00	<b>4.5</b>	
	2.2\U\c		c					1.00	0.30	0.30					0.30		0.15	0.15			<b>2.2</b>	
	2.2\U\d		d																			<b>0.0</b>
<b>3</b>	3\L\a	Nil	a			2.00	2.00		6.50	7.00	3.00	3.00	1.50	0.50	0.50	0.50	0.50	0.75	0.50	1.00	<b>28.3</b>	
	3\L\b		b						4.70		0.75				0.50	0.00	0.30	0.50	0.30	0.00	<b>7.1</b>	
	3\U\c		c						1.10	0.30					0.50			0.15			<b>2.1</b>	
	3\U\d		d																		<b>0.0</b>	
<b>4/1</b>	4.1\L\a	P	a			2.00	2.00		4.50	7.00	3.00	3.00	1.50	1.50	2.00	1.50	2.00	2.00	2.00	2.25	<b>34.0</b>	
	4.1\L\b		b									0.75	0.75	0.75	0.30	0.30	0.30	0.30	0.50	0.30	0.00	<b>4.3</b>
	4.1\U\c		c							0.30	0.30	0.30						0.30			<b>1.2</b>	
	4.1\U\d		d																		<b>0.0</b>	
<b>4/2</b>	4.2\L\a	N2P	a			2.00		12.60	7.60	12.10	5.10	6.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	<b>73.4</b>	
	4.2\L\b		b	2.50		1.30			5.40	8.60	3.60	3.60	2.00	1.00	1.00	0.75	1.00	1.50	1.00	0.75	<b>33.3</b>	
	4.2\U\c		c	11.30	5.70	5.70		3.80	3.60	2.10	1.50	2.00	1.00	1.00	1.00	0.75	0.50	0.75	0.75	0.50	<b>40.5</b>	
	4.2\U\d		d																		<b>0.0</b>	
<b>6</b>	6\L\a	N1PKNaMg	a			7.50		6.30	4.60	7.00	3.00	3.00	3.00	3.00	4.00	3.00	3.50	4.00	3.50	4.00	<b>55.4</b>	
	6\L\b		b			7.50				1.50	1.50	1.50	1.50	2.00	3.00	2.50	2.50	2.50	2.50	2.25	<b>28.5</b>	

				1965	1967	1968	1972	1976	1990	1994	1997	2000	2003	2006	2009	2012	2015	2018	2021	2024	
<b>7/1</b>	7.1\L\a	PKNaMg until 2012 (P)KNaMg since 2013	a			2.00	2.00	3.80	4.10	7.00	3.00	3.00	2.00	2.00	3.00	2.50	2.50	2.50	2.50	2.75	<b>41.9</b>
	7.1\L\b		b									0.75	0.75	2.00	1.50	1.00	0.75	0.50	0.75	0.75	0.75
	7.1\U\c	c							2.30	0.30	0.30	0.30	0.30	0.30	0.50	0.30	0.30	0.30	0.30	0.30	<b>5.5</b>
	7.1\U\d	d																			<b>0.0</b>
<b>7/2</b>	7.2\L\a	PKNaMg	a			2.00	2.00	3.80	4.10	7.00	3.00	3.00	2.00	2.00	3.00	2.50	2.50	2.50	2.50	2.75	<b>41.9</b>
	7.2\L\b		b									0.75	0.75	2.00	1.50	1.00	0.75	0.50	0.75	0.75	0.75
	7.2\U\c	c							2.30	0.30	0.30	0.30	0.30	0.30	0.50	0.30	0.30	0.30	0.30	0.30	<b>5.5</b>
	7.2\U\d	d																			<b>0.0</b>
<b>8</b>	8\L\a	PNaMg	a			2.00	2.00		4.00	7.00	3.00	3.00	2.00	2.00	3.00	2.50	2.50	2.50	2.50	2.75	<b>38.0</b>
	8\L\b		b									0.75	0.75	0.75	0.50	0.50	0.50	0.50	0.50	0.50	0.25
	8\U\c	c								0.30	0.30	0.30			0.30	0.30					<b>1.5</b>
	8\U\d	d																			<b>0.0</b>
<b>9/1</b>	9.1\L\a	N2PKNaMg until 1989	a			2.00	2.00	13.80		21.00	6.00	6.00	3.00	3.00	2.00	1.50	1.50	1.50	1.50	1.75	<b>64.8</b>
	9.1\L\b		b	5.00		2.50				11.50	1.50	1.50		0.75	0.75	0.50	0.50	0.50	0.75	0.50	0.75
	9.1\U\c	c	N2)PKNaMg since 1990	8.80	4.40	4.40				8.75	1.50	1.50			1.00	0.50	0.50	0.50	0.50		<b>32.4</b>
	9.1\U\d	d																			
<b>9/2</b>	9.2\L\a	N2PKNaMg	a			2.00	2.00	13.80	9.50	15.10	10.20	6.00	4.00	3.00	3.00	2.50	2.50	2.50	2.50	2.75	<b>78.6</b>
	9.2\L\b		b	5.00		2.50			6.40	8.60	3.60	3.60	2.00	3.00	2.00	1.50	1.50	1.50	1.50	1.50	1.50
	9.2\U\c	c	8.80	4.40	4.40			4.30	5.10	2.10	3.00	3.00	1.00	2.00	1.50	2.00	2.00	2.00	2.00	2.00	<b>45.6</b>
	9.2\U\d	d																			<b>0.0</b>
<b>10</b>	10\L\a	N2PNaMg	a			2.00		16.30	4.40	12.10	10.20	6.00	4.00	3.00	4.00	3.00	2.50	2.50	2.50	2.75	<b>72.5</b>
	10\L\b		b	2.50		1.30			3.30	8.60	7.20	5.00	2.00		1.50	1.00	1.00	1.50	1.25	1.00	<b>36.2</b>
	10\U\c	c	10.00	5.00	5.00			2.70	5.10	4.20	2.10	2.00	0.50	1.00	0.50	0.75	1.00	0.75	0.75	<b>40.6</b>	
	10\U\d	d																			<b>0.0</b>
<b>11/1</b>	11.1\L\a	N3PKNaMg	a			4.00		20.70	3.80	22.00	12.00	12.00	5.00	5.00	5.00	4.00	3.50	3.50	4.00	4.00	<b>104.5</b>
	11.1\L\b		b	12.60	6.30	6.30			8.50	10.50	4.50	4.50	2.00	1.00	1.50	1.00	1.50	2.50	1.50	2.00	<b>64.2</b>
	11.1\U\c	c	10.00	5.00	5.00			3.70	9.00	6.00	3.00	3.00	1.50	2.00	1.50	1.50	1.75	1.50	1.50	<b>54.5</b>	
	11.1\U\d	d																			<b>0.0</b>
<b>11/2</b>	11.2\L\a	N3PKNaMgSi	a			4.00		19.50	6.20	14.00	12.00	10.20	5.00	4.00	3.00	2.50	3.00	3.00	3.00	3.25	<b>89.4</b>
	11.2\L\b		b	7.50	3.80	3.80			4.20	10.50	4.50	5.00	2.00	1.00	1.50	1.50	2.00	2.50	2.00	1.75	<b>51.8</b>
	11.2\U\c	c	10.00	5.00	5.00			3.20	9.00	3.00	3.00	1.50	1.50	1.50	1.00	1.50	1.75	1.50	1.75	<b>48.5</b>	
	11.2\U\d	d																			<b>0.0</b>
<b>12</b>	12\a	Nil	a					18.20	3.20	3.00	3.00	3.00	1.50	1.50	2.00	1.50	1.75	1.75	1.75	2.00	<b>42.2</b>
	12\b		b					7.50	4.30	0.75			0.75	0.75	1.00	0.75	0.75	0.75	0.75	0.50	<b>18.1</b>
	12\c	c								0.30					0.30	0.30		0.30	0.30	<b>1.5</b>	
	12\d	d																			<b>0.0</b>

							1965	1967	1968	1972	1976	1990	1994	1997	2000	2003	2006	2009	2012	2015	2018	2021	2024	
<b>13/1</b>	13.1\L\ a	FYM/FM until 1995	a						2.00	2.00		5.10	5.00	3.00	3.00	2.00	1.50	2.00	1.50	1.75	2.00	1.75	2.00	<b>32.6</b>
	13.1\L\ b	Nil since 1996	b													0.75	0.75	1.00	0.75	0.75	1.00	0.75	0.75	<b>5.8</b>
	13.1\U\ c		c	2.50		1.30							0.30			0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	<b>6.2</b>
	13.1\U\ d		d																					<b>0.0</b>
<b>13/2</b>	13.2\L\ a	FYM/PM	a						2.00	2.00		5.10	5.00	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.25	<b>34.1</b>
	13.2\L\ b		b													0.30	0.30	0.50	0.30	0.30	0.50	0.30		<b>2.5</b>
	13.2\U\ c		c	2.50		1.30							0.30											<b>4.1</b>
	13.2\U\ d		d																					<b>0.0</b>
<b>14/1</b>	14.1\L\ a	N*2 PKNaMg	a						2.00	2.00			7.00	3.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.25	<b>31.0</b>
	14.1\L\ b	until 1989	b														1.50		0.50	0.50	0.75	0.50	0.50	<b>3.8</b>
	14.1\U\ c	(N*2)PKNaMg	c																					<b>0.0</b>
	14.1\U\ d	since 1990	d																					<b>0.0</b>
<b>14/2</b>	14.2\L\ a	N*2PKNaMg	a						2.00	2.00		0.90	2.25	2.25	2.25	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.25	<b>25.7</b>
	14.2\L\ b		b																					<b>0.0</b>
	14.2\U\ c		c																					<b>0.0</b>
	14.2\U\ d		d																					<b>0.0</b>
<b>15</b>	15\L\ a	N*3 PKNaMg	a								6.90	2.90	3.00	3.00	5.10	3.00	3.00	3.00	3.00	2.50	2.50	2.50	2.00	<b>40.4</b>
	15\L\ b	since 2013	b										0.75	0.75	0.75	1.50	1.50	1.00	0.75	0.50	0.30	0.50		<b>8.3</b>
	15\U\ c	PKNaMg until 2012	c										1.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.00	0.30		<b>3.7</b>
	15\U\ d		d																					<b>0.0</b>
<b>16</b>	16\L\ a	N*1PKNaMg	a						2.00	2.00	1.90	2.00	2.25	2.25	2.25	3.00	3.00	3.00	3.00	2.50	2.50	2.50	2.50	<b>34.2</b>
	16\L\ b		b																		0.30			<b>0.3</b>
	16\U\ c		c																					<b>0.0</b>
	16\U\ d		d																					<b>0.0</b>
<b>17</b>	17\L\ a	N*1	a						2.00	2.00		4.00	2.25	2.25	2.25	2.25	1.50	2.00	1.50	1.75	2.00	1.75	1.75	<b>27.5</b>
	17\L\ b		b																					<b>0.0</b>
	17\U\ c		c																					<b>0.0</b>
	17\U\ d		d																					<b>0.0</b>
<b>18 (18/3)</b>	18\3\ a	N2KNaMg	a						1.10	1.10	1.90	7.30	12.10	5.10	5.10	4.00	4.00	4.00	4.00	3.50	4.00	4.00	3.75	<b>61.2</b>
	18\3\ b		b										6.60	3.60	2.10	2.00	1.00	1.50	1.50	1.50	1.50	1.50	1.75	<b>22.8</b>
<b>18 (18/1)</b>	18\1\ c		c	5.00	2.50	2.50						9.40	8.10	2.10	2.10		1.00	0.30	0.50	0.75	1.00	0.75	1.00	<b>36.0</b>
	18\1\ d		d																					<b>0.0</b>
<b>18/2</b>	18\2	N2KNaMg							1.10	1.10														<b>2.2</b>

			1965	1967	1968	1972	1976	1990	1994	1997	2000	2003	2006	2009	2012	2015	2018	2021	2024	
<b>19/1</b>	19\1	FYM			1.10															<b>1.1</b>
<b>19/2</b>	19\2				1.10															<b>1.1</b>
<b>19/3</b>	19\3				1.10															<b>1.1</b>
<b>20/1</b>	20\1	FYM/N*PK			1.10															<b>1.1</b>
<b>20/2</b>	20\2				1.10															<b>1.1</b>
<b>20/3</b>	20\3				1.10															<b>1.1</b>

A new liming scheme was started in 1965. Most plots were divided into four; sub-plots 'a' and 'b' on the previously limed (L) halves, sub-plots 'c' and 'd' on the previously unlimed (U) halves. Sub-plots 'a', 'b' and 'c' now receive different amounts of ground chalk as required to maintain soil (0-23cm) at pH 7, 6 and 5 respectively. Sub-plot 'd' receives no chalk and its pH reflects inputs from the various treatments and the atmosphere. Plots 12 and 15 were not included in this scheme until 1976; plots 18/2, 19 and 20 are not included in this scheme. To avoid large fluctuations in pH the scheme was revised in 1994 and ground chalk is now applied on a regular three-year cycle, the amounts applied based on a three-year cycle of soil analysis.

From 1965, plots 5/1, 5/2 and 6 were used for microplots. Parts of plot 6 (6a & 6b) have been re-included in the main expt since 1972 and first received chalk in 1968. The other half of plot 6 and plots 5/1 and 5/2 have remained unlimed and outside the main experiment.

For details of treatments see Rothamsted Research (2021) *Park Grass Experiment plan and treatments since 1965, updated 2018*

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