

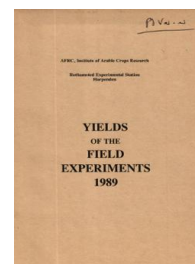
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## Yields of the Field Experiments 1989

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

#### Rothamsted Research

Rothamsted Research (1990) *89/R/PG/5 Park Grass - Old Grass* ; Yields Of The Field Experiments 1989, pp 22 - 26 - DOI: <https://doi.org/10.23637/ERADOC-1-40>

89/R/PG/5

PARK GRASS

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

The 134th year, hay.

For previous years see 'Details' 1967 and 1973 and 74-88/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/PLOT3  | Plot 3    | None                       |
| P        | Plot 4-1  | P                          |
| N2P      | Plot 4-2  | N2 P                       |
| N1MIN    | Plot 6    | N1 P K Na Mg               |
| MIN      | Plot 7    | P K Na Mg                  |
| PNAMG    | Plot 8    | P Na Mg                    |
| N2MIN    | Plot 9    | N2 P K Na Mg               |
| N2PNAMG  | Plot 10   | N2 P Na Mg                 |
| N3MIN    | Plot 11-1 | N3 P K Na Mg               |
| N3MINSI  | Plot 11-2 | N3 P K Na Mg Si            |
| O/PLOT12 | Plot 12   | None                       |
| D/F      | Plot 13   | D/F                        |
| N2*MIN   | Plot 14   | N2* P K Na Mg              |
| MIN(N2*) | Plot 15   | P K Na Mg (N2* until 1875) |
| N1*MIN   | 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 single superphosphate until 1986, triple superphosphate in 1974, and since 1987 |
| 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 tonnes every fourth year   |
| F:          | Fish meal every fourth year to supply 63 kg N  |
| MIN:        | P K Na Mg  |

89/R/PG/5

Sub plots

2. **LIME**                      Liming:

|   |   |  |
|---|---|--|
| 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.

Additional sub plots (Plots 18, 19 and 20 only) (tonnes CaCO<sub>3</sub> applied every fourth year 1920-1964):

|          |      |      |
|----------|------|------|
| N2KNAMG0 | 18-1 | None |
| N2KNAMG2 | 18-2 | 13.5 |
| N2KNAMG1 | 18-3 | 7.9  |
| DO       | 19-1 | None |
| D2       | 19-2 | 6.3  |
| D1       | 19-3 | 1.1  |
| D/N*PK0  | 20-1 | None |
| D/N*PK2  | 20-2 | 5.6  |
| D/N*PK1  | 20-3 | 1.1  |

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'. The remaining sub plots of Plots 18, 19 and 20 are treated as 'a'.

**NOTE:** For a fuller record of treatments see 'Details' etc.

**Cultivations, etc.:**- K, Na, Mg and Si applied: 7 Dec, 1988. P applied: 8 Dec. FYM applied: 14 Dec. N applied: 4 May, 1989. Cut: 12 June, 26 Sept.

89/R/PG/5

1ST CUT (12/6/89) DRY MATTER TONNES/HECTARE

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

| LIME<br>MANURE | A    | B    | C    | D    | MEAN |
|----------------|------|------|------|------|------|
| N1             | 1.65 | 1.13 | 0.56 | 0.36 | 0.92 |
| O(D)           | 1.79 | 2.06 | 0.83 | 0.65 | 1.33 |
| O/PLOT3        | 1.52 | 1.86 | 0.43 | 0.60 | 1.10 |
| P              | 2.54 | 2.76 | 1.44 | 1.64 | 2.10 |
| N2P            | 1.22 | 1.24 | 1.24 | 0.85 | 1.14 |
| N1MIN          | 3.76 | 3.83 |      |      | 3.80 |
| MIN            | 4.38 | 4.51 | 3.45 | 3.15 | 3.87 |
| PNAMG          | 1.94 | 2.25 | 1.79 | 2.01 | 2.00 |
| N2MIN          | 3.49 | 3.81 | 2.25 | 1.51 | 2.77 |
| N2PNAMG        | 1.74 | 1.64 | 1.26 | 0.87 | 1.38 |
| N3MIN          | 3.76 | 3.28 | 2.53 | 2.45 | 3.01 |
| N3MINSI        | 4.13 | 3.80 | 3.33 | 1.97 | 3.31 |
| O/PLOT12       | 1.16 | 1.08 | 0.55 | 0.75 | 0.89 |
| D/F            | 4.60 | 4.36 | 3.89 | 3.45 | 4.08 |
| N2*MIN         | 4.72 | 5.08 | 4.41 | 4.34 | 4.64 |
| MIN(N2*)       | 3.52 | 3.38 | 2.61 | 2.50 | 3.00 |
| N1*MIN         | 4.56 | 4.59 | 2.83 | 3.16 | 3.79 |
| N1*            | 2.51 | 2.64 | 1.85 | 1.69 | 2.17 |
| N2KNAMG0       | 0.24 | 0.24 | 0.24 |      |      |
| N2KNAMG2       | 1.59 |      |      |      | 1.59 |
| N2KNAMG1       | 1.62 | 1.24 |      |      | 1.43 |
| D0             | 4.14 |      |      |      | 4.14 |
| D2             | 4.87 |      |      |      | 4.87 |
| D1             | 4.54 |      |      |      | 4.54 |
| D/N*PK0        | 4.64 |      |      |      | 4.64 |
| D/N*PK2        | 5.10 |      |      |      | 5.10 |
| D/N*PK1        | 4.41 |      |      |      | 4.41 |

1ST CUT MEAN DM% 28.4

89/R/PG/5

2ND CUT (26/9/89) DRY MATTER TONNES/HECTARE

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

| LIME          | A    | B    | C    | D    | MEAN |
|---------------|------|------|------|------|------|
| <b>MANURE</b> |      |      |      |      |      |
| N1            | 1.28 | 0.60 | 0.17 | 0.08 | 0.53 |
| O(D)          | 0.50 | 0.75 | 0.21 | 0.25 | 0.43 |
| O/PLOT3       | 0.30 | 0.58 | 0.14 | 0.13 | 0.29 |
| P             | 0.51 | 0.73 | 0.42 | 0.23 | 0.47 |
| N2P           | 0.88 | 1.02 | 0.67 | 0.66 | 0.81 |
| N1MIN         | 0.68 | 0.98 |      |      | 0.83 |
| MIN           | 1.29 | 1.32 | 1.18 | 0.76 | 1.14 |
| PNAMG         | 0.54 | 0.61 | 0.69 | 0.56 | 0.60 |
| N2MIN         | 0.91 | 1.10 | 1.16 | 1.06 | 1.06 |
| N2PNAMG       | 0.78 | 0.87 | 0.72 | 0.63 | 0.75 |
| N3MIN         | 1.54 | 1.14 | 1.51 | 1.35 | 1.38 |
| N3MINSI       | 1.61 | 1.55 | 1.43 | 1.73 | 1.58 |
| O/PLOT12      | 0.52 | 0.49 | 0.55 | 0.48 | 0.51 |
| D/F           | 1.67 | 1.50 | 1.04 | 0.94 | 1.29 |
| N2*MIN        | 1.19 | 1.34 | 0.88 | 0.94 | 1.09 |
| MIN(N2*)      | 1.10 | 0.75 | 0.69 | 0.55 | 0.77 |
| N1*MIN        | 1.17 | 1.27 | 0.40 | 0.40 | 0.81 |
| N1*           | 0.48 | 0.43 | 0.49 | 0.86 | 0.56 |
| N2KNAMG0      | 0.10 | 0.09 | 0.09 |      |      |
| N2KNAMG2      | 1.00 |      |      |      | 1.00 |
| N2KNAMG1      | 0.63 | 0.76 |      |      | 0.69 |
| D0            | 0.80 |      |      |      | 0.80 |
| D2            | 1.34 |      |      |      | 1.34 |
| D1            | 1.02 |      |      |      | 1.02 |
| D/N*PK0       | 1.05 |      |      |      | 1.05 |
| D/N*PK2       | 1.24 |      |      |      | 1.24 |
| D/N*PK1       | 1.23 |      |      |      | 1.23 |

2ND CUT MEAN DM% 43.9

89/R/PG/5

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

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

| LIME<br>MANURE | A    | B    | C    | D    | MEAN |
|----------------|------|------|------|------|------|
| N1             | 2.92 | 1.73 | 0.73 | 0.44 | 1.45 |
| O(D)           | 2.29 | 2.81 | 1.04 | 0.90 | 1.76 |
| O/PLOT3        | 1.82 | 2.44 | 0.57 | 0.72 | 1.39 |
| P              | 3.05 | 3.49 | 1.87 | 1.87 | 2.57 |
| N2P            | 2.11 | 2.26 | 1.90 | 1.51 | 1.94 |
| N1MIN          | 4.45 | 4.81 |      |      | 4.63 |
| MIN            | 5.67 | 5.83 | 4.64 | 3.91 | 5.01 |
| PNAMG          | 2.49 | 2.86 | 2.48 | 2.57 | 2.60 |
| N2MIN          | 4.40 | 4.91 | 3.41 | 2.57 | 3.82 |
| N2PNAMG        | 2.52 | 2.51 | 1.98 | 1.50 | 2.13 |
| N3MIN          | 5.31 | 4.41 | 4.04 | 3.80 | 4.39 |
| N3MINSI        | 5.74 | 5.35 | 4.75 | 3.70 | 4.89 |
| O/PLOT12       | 1.68 | 1.57 | 1.11 | 1.23 | 1.40 |
| D/F            | 6.28 | 5.86 | 4.93 | 4.39 | 5.37 |
| N2*MIN         | 5.91 | 6.42 | 5.29 | 5.28 | 5.73 |
| MIN(N2*)       | 4.62 | 4.12 | 3.30 | 3.05 | 3.78 |
| N1*MIN         | 5.73 | 5.86 | 3.23 | 3.56 | 4.59 |
| N1*            | 2.98 | 3.07 | 2.34 | 2.55 | 2.74 |
| N2KNAMG0       | 0.34 | 0.33 | 0.33 |      |      |
| N2KNAMG2       | 2.58 |      |      |      | 2.58 |
| N2KNAMG1       | 2.25 | 2.00 |      |      | 2.12 |
| D0             | 4.94 |      |      |      | 4.94 |
| D2             | 6.21 |      |      |      | 6.21 |
| D1             | 5.56 |      |      |      | 5.56 |
| D/N*PK0        | 5.69 |      |      |      | 5.69 |
| D/N*PK2        | 6.34 |      |      |      | 6.34 |
| D/N*PK1        | 5.64 |      |      |      | 5.64 |

TOTAL OF 2 CUTS MEAN DM% 36.1

PLOT AREA HARVESTED 0.00002