

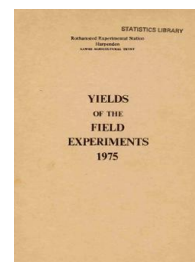
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## Yields of the Field Experiments 1975

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### 75/ R&w/G/1 - Aqueous Ammonia & Nitrification Inhibitors - Grass

#### Rothamsted Research

Rothamsted Research (1976) 75/ R&w/G/1 - *Aqueous Ammonia & Nitrification Inhibitors - Grass* ;  
Yields Of The Field Experiments 1975, pp 391 - 398 - DOI:

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75/R/G/1 and 75/W/G/1

GRASS

# AQUEOUS AMMONIA AND NITRIFICATION INHIBITORS

Object: To study the effects of two nitrification inhibitors on autumn and spring-injected aqueous ammonia - Rothamsted (R) Claycroft and Woburn (W) Bull Field.

Sponsors: J. Ashworth, G.G. Briggs, A. Penny.

Design: Claycroft (R): 4 randomised blocks of 8 plots.  
Bull Field (W): 3 randomised blocks of 8 plots.

Whole plot dimensions: 2.43 x 9.14.

Treatments: All combinations of:-

- |                                                                                          |           |
|------------------------------------------------------------------------------------------|-----------|
| 1. Nitrification inhibitors (added with aqueous ammonia, itself applied at 250 kg N/ha): | INHIBITOR |
| None                                                                                     | -         |
| Carbon disulphide at 15 kg/ha                                                            | CS        |
| 'N-serve' (2-chloro-6-trichloromethyl-pyridine) at 2.5 kg/ha                             | NS        |
| 2. Times of applying aqueous ammonia:                                                    | N TIME    |
| Autumn 1974                                                                              | AUTUMN    |
| Spring 1975                                                                              | SPRING    |
| together with two extra plots:                                                           | EXTRA     |
| No nitrogen                                                                              | NO N      |
| 'Nitro-Chalk' at 250 kg N/ha, dressing divided between cuts in 1975.                     | NC        |

Basal manuring: (0:14:28) at 500 kg.

Seed: Claycroft (R): Gremie perennial ryegrass.  
Bull Field (W): Old grass.

Cultivations, etc.:-

Claycroft (R): Aqueous ammonia autumn treatments injected: 28 Nov, 1974.  
PK applied: 14 Jan, 1975. Aqueous ammonia spring treatments injected: 26 Feb. 'Nitro-Chalk' applied in three equal applications: 18 Mar, 16 June, 8 Sept. Cut three times: 6 June, 1 Sept, 28 Oct. Previous crops: Grass 1973, 1974.

75/R/G/1 and 75/W/G/1

Bull Field (W): Aqueous ammonia autumn treatments injected: 27 Nov, 1974.  
PK applied: 10 Jan, 1975. Aqueous ammonia spring treatments injected:  
25 Feb. 'Nitro-Chalk applied in three equal applications: 19 Mar,  
23 June, 4 Sept. Cut twice: 12 June, 4 Sept. Previous crops:  
Grass 1973, 1974.

- NOTES: (1) Grass samples were taken for N determinations.  
(2) N in the injected soil profile was measured at regular intervals from December, 1974 to June, 1975 and ammonia evaporation was measured in December, 1974 and March, 1975.

75/R/G/1 CLAYCROFT (R)

1ST CUT (6/6/75) DRY MATTER TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

| INHIBITR | -    | CS   | NS   | MEAN |
|----------|------|------|------|------|
| N TIME   |      |      |      |      |
| AUTUMN   | 6.61 | 7.12 | 7.31 | 7.01 |
| SPRING   | 6.41 | 7.03 | 7.04 | 6.83 |
| MEAN     | 6.51 | 7.08 | 7.17 | 6.92 |

| EXTRA | NO N | NC   | MEAN |
|-------|------|------|------|
|       | 4.57 | 6.68 | 5.63 |

GRAND MEAN 6.60

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | EXTRA | N TIME | INHIBITR | N TIME<br>INHIBITR<br>AND EXTRA |
|-------|-------|--------|----------|---------------------------------|
| SED   | 0.354 | 0.204  | 0.250    | 0.354                           |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE    | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 21 | 0.501 | 7.6 |

1ST CUT MEAN DM% 25.6

PLOT AREA HARVESTED 0.00082

75/R/G/1 CLAYCROFT (R)

2ND CUT (1/9/75) DRY MATTER TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

| INHIBITR | -    | CS   | NS   | MEAN |
|----------|------|------|------|------|
| N TIME   |      |      |      |      |
| AUTUMN   | 0.53 | 0.48 | 0.48 | 0.49 |
| SPRING   | 0.44 | 0.63 | 0.44 | 0.50 |
| MEAN     | 0.48 | 0.55 | 0.46 | 0.50 |

| EXTRA | NO N | NC   | MEAN |
|-------|------|------|------|
|       | 0.23 | 0.64 | 0.43 |

GRAND MEAN 0.48

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | EXTRA | N TIME | INHIBITR | N TIME<br>INHIBITR<br>AND EXTRA |
|-------|-------|--------|----------|---------------------------------|
| SED   | 0.091 | 0.052  | 0.064    | 0.091                           |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE    | CV%  |
|----------|----|-------|------|
| BLOCK.WP | 21 | 0.128 | 26.6 |

2ND CUT MEAN DM% 52.6

2ND CUT PLOT AREA HARVESTED 0.00073

75/R/G/1 CLAYCROFT (R)

3RD CUT (28/10/75) DRY MATTER TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

| INHIBITR | -    | CS   | NS   | MEAN |
|----------|------|------|------|------|
| N TIME   |      |      |      |      |
| AUTUMN   | 0.15 | 0.16 | 0.16 | 0.16 |
| SPRING   | 0.19 | 0.21 | 0.22 | 0.20 |
| MEAN     | 0.17 | 0.18 | 0.19 | 0.18 |

| EXTRA | NO N | NC   | MEAN |
|-------|------|------|------|
|       | 0.08 | 0.48 | 0.28 |

GRAND MEAN 0.21

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | EXTRA | N TIME | INHIBITR | N TIME<br>INHIBITR<br>AND EXTRA |
|-------|-------|--------|----------|---------------------------------|
| SED   | 0.035 | 0.020  | 0.025    | 0.035                           |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE    | CV%  |
|----------|----|-------|------|
| BLOCK.WP | 21 | 0.050 | 24.4 |

3RD CUT MEAN DM% 21.4

3RD CUT PLOT AREA HARVESTED 0.00065

75/R/G/1 CLAYCROFT (R)

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

| INHIBITR | -    | CS   | NS   | MEAN |
|----------|------|------|------|------|
| N TIME   |      |      |      |      |
| AUTUMN   | 7.28 | 7.76 | 7.95 | 7.66 |
| SPRING   | 7.03 | 7.87 | 7.69 | 7.53 |
| MEAN     | 7.16 | 7.81 | 7.82 | 7.60 |

| EXTRA | NO N | NC   | MEAN |
|-------|------|------|------|
|       | 4.88 | 7.79 | 6.34 |

GRAND MEAN 7.28

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | EXTRA | N TIME | INHIBITR | N TIME<br>INHIBITR<br>AND EXTRA |
|-------|-------|--------|----------|---------------------------------|
| SED   | 0.342 | 0.198  | 0.242    | 0.342                           |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE    | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 21 | 0.484 | 6.6 |

TOTAL OF 3 CUTS MEAN DM% 33.2

75/W/G/1 BULL FIELD (W)

1ST CUT (6/6/75) DRY MATTER TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

| INHIBITR | -    | CS   | NS   | MEAN |
|----------|------|------|------|------|
| N TIME   |      |      |      |      |
| AUTUMN   | 6.87 | 7.05 | 7.18 | 7.03 |
| SPRING   | 6.89 | 6.62 | 6.77 | 6.76 |
| MEAN     | 6.88 | 6.83 | 6.98 | 6.90 |

| EXTRA | NO N | NC   | MEAN |
|-------|------|------|------|
|       | 6.16 | 7.34 | 6.75 |

GRAND MEAN 6.86

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | EXTRA | N TIME | INHIBITR | N TIME<br>INHIBITR<br>AND EXTRA |
|-------|-------|--------|----------|---------------------------------|
| SED   | 0.473 | 0.273  | 0.334    | 0.473                           |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE    | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 13 | 0.579 | 8.4 |

1ST CUT MEAN DM% 23.0

PLOT AREA HARVESTED 0.00089

75/W/G/1 BULL FIELD (W)

2ND CUT (4/9/75) DRY MATTER TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

| INHIBITR | -    | CS   | NS   | MEAN |
|----------|------|------|------|------|
| N TIME   |      |      |      |      |
| AUTUMN   | 0.49 | 0.70 | 0.67 | 0.62 |
| SPRING   | 1.18 | 0.57 | 0.47 | 0.74 |
| MEAN     | 0.83 | 0.63 | 0.57 | 0.68 |

| EXTRA | NO N | NC   | MEAN |
|-------|------|------|------|
|       | 0.72 | 1.24 | 0.98 |

GRAND MEAN 0.75

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | EXTRA | N TIME | INHIBITR | N TIME<br>INHIBITR<br>AND EXTRA |
|-------|-------|--------|----------|---------------------------------|
| SED   | 0.269 | 0.155  | 0.190    | 0.269                           |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE    | CV%  |
|----------|----|-------|------|
| BLOCK.WP | 13 | 0.330 | 43.8 |

2ND CUT MEAN DM% 40.9

PLOT AREA HARVESTED 0.00066

75/W/G/1 BULL FIELD (W)

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

\*\*\* TABLES OF MEANS \*\*\*

| INHIBITR | -    | CS   | NS   | MEAN |
|----------|------|------|------|------|
| N TIME   |      |      |      |      |
| AUTUMN   | 7.35 | 7.75 | 7.85 | 7.65 |
| SPRING   | 8.07 | 7.19 | 7.24 | 7.50 |
| MEAN     | 7.71 | 7.47 | 7.55 | 7.58 |

| EXTRA | NO N | NC   | MEAN |
|-------|------|------|------|
|       | 6.38 | 8.57 | 7.73 |

GRAND MEAN 7.61

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | EXTRA | N TIME | INHIBITR | N TIME<br>INHIBITR<br>AND EXTRA |
|-------|-------|--------|----------|---------------------------------|
| SED   | 0.611 | 0.353  | 0.432    | 0.611                           |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE    | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 13 | 0.749 | 9.8 |

TOTAL OF 2 CUTS MEAN DM% 31.9