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## Yields of the Field Experiments 1978

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### 78/R/B/2 Factors Affecting Yield and Disease Control - Barley

#### Rothamsted Research

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78/R/B/2

WINTER BARLEY

FACTORS AFFECTING YIELD AND DISEASE CONTROL

Object: To study the effects and interactions of sowing date, seed rate, timing of mildew control and spring nitrogen on the incidence of mildew and on yield of winter barley - Scout.

Sponsors: A. Bainbridge, J.F. Jenkyn, M.E. Finney.

Design: 3 x 2 x 2 x 2 x 2 in 2 blocks of 24 plots with confounding.

Whole plot dimensions: 2.13 x 6.10.

Treatments: All combinations of:-

- |                |                                                       |
|----------------|-------------------------------------------------------|
| 1. S DATE T    | Sowing date and autumn tridemorph:                    |
| 6 OCT+T        | 6 October, tridemorph spray in autumn on 18 Nov, 1977 |
| 6 OCT 0        | 6 October, no tridemorph spray in autumn              |
| 2 NOV 0        | 2 November, no tridemorph spray in autumn             |
| 2. SEEDRATE    | Seed rates (kg):                                      |
| 78             |                                                       |
| 156            |                                                       |
| 3. TRIDEMOR(1) | Tridemorph in early spring:                           |
| NONE           | None                                                  |
| SPRAYED        | Sprayed (3 May, 1978)                                 |
| 4. TRIDEMOR(2) | Tridemorph in late spring:                            |
| NONE           | None                                                  |
| SPRAYED        | Sprayed (26 May, 1978)                                |
| 5. N TIME      | Time of applying nitrogen (at 75 kg):                 |
| 6 MAR          | 6 March                                               |
| 25 APR         | 25 April                                              |

NOTES: (1) Tridemorph was applied at 0.53 kg in 340 l.

(2) The experiment had a surround of 18.3 m sown to winter barley, variety Athene, on 6 October, 1977 and each plot was separated from its neighbours by sidelands of 2.13 m and internal headlands of 9.14 m sown to Athene on this date.

Basal applications: Manures: (10:24:24) at 250 kg, combine drilled. Weedkiller: Mecoprop at 3.1 kg in 220 l.

Seed: Hoppel.

Cultivations, etc.:— Straw burned: 11 Sept, 1977. Chisel ploughed twice: 16 Sept and 19 Sept. Rotary harrowed: 28 Sept. Weedkiller applied: 4 May, 1978. Combine harvested: 11 Aug. Previous crops: Wheat 1976, Barley 1977.

NOTE: Emergence counts were made for both sowings. Mildew was assessed three times during the season. Numbers of fertile tillers, grains per ear and thousand grain weights were assessed.

78/R/B/2

GRAIN TONNES/HECTARE

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

|             |      |         |      |
|-------------|------|---------|------|
| SEEDRATE    | 78   | 156     | MEAN |
| S DATE T    |      |         |      |
| 6 OCT+T     | 5.78 | 5.48    | 5.63 |
| 6 OCT 0     | 5.49 | 5.48    | 5.49 |
| 2 NOV 0     | 3.60 | 3.60    | 3.60 |
| MEAN        | 4.96 | 4.85    | 4.91 |
| TRIDEMOR(1) | NONE | SPRAYED | MEAN |
| S DATE T    |      |         |      |
| 6 OCT+T     | 5.45 | 5.81    | 5.63 |
| 6 OCT 0     | 5.28 | 5.70    | 5.49 |
| 2 NOV 0     | 3.63 | 3.57    | 3.60 |
| MEAN        | 4.79 | 5.02    | 4.91 |
| TRIDEMOR(1) | NONE | SPRAYED | MEAN |
| SEEDRATE    |      |         |      |
| 78          | 4.73 | 5.18    | 4.96 |
| 156         | 4.84 | 4.86    | 4.85 |
| MEAN        | 4.79 | 5.02    | 4.91 |
| TRIDEMOR(2) | NONE | SPRAYED | MEAN |
| S DATE T    |      |         |      |
| 6 OCT+T     | 5.55 | 5.70    | 5.63 |
| 6 OCT 0     | 5.24 | 5.74    | 5.49 |
| 2 NOV 0     | 3.47 | 3.72    | 3.60 |
| MEAN        | 4.75 | 5.06    | 4.91 |
| TRIDEMOR(2) | NONE | SPRAYED | MEAN |
| SEEDRATE    |      |         |      |
| 78          | 5.22 | 4.70    | 4.96 |
| 156         | 4.29 | 5.41    | 4.85 |
| MEAN        | 4.75 | 5.06    | 4.91 |

78/R/B/2

GRAIN TONNES/HECTARE

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

|             |       |         |         |         |
|-------------|-------|---------|---------|---------|
| TRIDEMOR(2) | NONE  | SPRAYED | MEAN    |         |
| TRIDEMOR(1) |       |         |         |         |
| NONE        | 4.44  | 5.13    | 4.79    |         |
| SPRAYED     | 5.07  | 4.98    | 5.02    |         |
| MEAN        | 4.75  | 5.06    | 4.91    |         |
| N TIME      | 6 MAR | 25 APR  | MEAN    |         |
| S DATE T    |       |         |         |         |
| 6 OCT+T     | 5.93  | 5.32    | 5.63    |         |
| 6 OCT 0     | 5.61  | 5.37    | 5.49    |         |
| 2 NOV 0     | 3.11  | 4.09    | 3.60    |         |
| MEAN        | 4.88  | 4.93    | 4.91    |         |
| N TIME      | 6 MAR | 25 APR  | MEAN    |         |
| SEEDRATE    |       |         |         |         |
| 78          | 4.81  | 5.10    | 4.96    |         |
| 156         | 4.95  | 4.75    | 4.85    |         |
| MEAN        | 4.88  | 4.93    | 4.91    |         |
| N TIME      | 6 MAR | 25 APR  | MEAN    |         |
| TRIDEMOR(1) |       |         |         |         |
| NONE        | 4.80  | 4.78    | 4.79    |         |
| SPRAYED     | 4.97  | 5.08    | 5.02    |         |
| MEAN        | 4.88  | 4.93    | 4.91    |         |
| N TIME      | 6 MAR | 25 APR  | MEAN    |         |
| TRIDEMOR(2) |       |         |         |         |
| NONE        | 4.82  | 4.68    | 4.75    |         |
| SPRAYED     | 4.94  | 5.17    | 5.06    |         |
| MEAN        | 4.88  | 4.93    | 4.91    |         |
| SEEDRATE    | 78    | 156     |         |         |
| TRIDEMOR(1) | NONE  | SPRAYED | NONE    | SPRAYED |
| S DATE T    |       |         |         |         |
| 6 OCT+T     | 5.63  | 5.92    | 5.27    | 5.69    |
| 6 OCT 0     | 5.11  | 5.88    | 5.45    | 5.52    |
| 2 NOV 0     | 3.46  | 3.74    | 3.81    | 3.39    |
| SEEDRATE    | 78    | 156     |         |         |
| TRIDEMOR(2) | NONE  | SPRAYED | NONE    | SPRAYED |
| S DATE T    |       |         |         |         |
| 6 OCT+T     | 6.29  | 5.27    | 4.81    | 6.14    |
| 6 OCT 0     | 5.57  | 5.42    | 4.91    | 6.06    |
| 2 NOV 0     | 3.79  | 3.41    | 3.16    | 4.04    |
| TRIDEMOR(1) | NONE  | SPRAYED | SPRAYED |         |
| TRIDEMOR(2) | NONE  | SPRAYED | NONE    | SPRAYED |
| S DATE T    |       |         |         |         |
| 6 OCT+T     | 5.17  | 5.72    | 5.93    | 5.68    |
| 6 OCT 0     | 4.83  | 5.74    | 5.65    | 5.74    |
| 2 NOV 0     | 3.33  | 3.94    | 3.62    | 3.51    |
|             |       |         | 381     |         |

78/R/B/2

GRAIN TONNES/HECTARE

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

|             |       |         |         |         |
|-------------|-------|---------|---------|---------|
| TRIDEMOR(1) | NONE  |         | SPRAYED |         |
| TRIDEMOR(2) | NONE  | SPRAYED | NONE    | SPRAYED |
| SEEDRATE    |       |         |         |         |
| 78          | 4.86  | 4.60    | 5.57    | 4.80    |
| 156         | 4.02  | 5.67    | 4.57    | 5.16    |
| SEEDRATE    | 78    |         | 156     |         |
| N TIME      | 6 MAR | 25 APR  | 6 MAR   | 25 APR  |
| S DATE T    |       |         |         |         |
| 6 OCT+T     | 5.95  | 5.60    | 5.91    | 5.05    |
| 6 OCT 0     | 5.49  | 5.50    | 5.73    | 5.24    |
| 2 NOV 0     | 3.00  | 4.20    | 3.21    | 3.98    |
| TRIDEMOR(1) | NONE  |         | SPRAYED |         |
| N TIME      | 6 MAR | 25 APR  | 6 MAR   | 25 APR  |
| S DATE T    |       |         |         |         |
| 6 OCT+T     | 5.95  | 4.95    | 5.91    | 5.70    |
| 6 OCT 0     | 5.18  | 5.38    | 6.04    | 5.35    |
| 2 NOV 0     | 3.27  | 4.00    | 2.94    | 4.19    |
| TRIDEMOR(1) | NONE  |         | SPRAYED |         |
| N TIME      | 6 MAR | 25 APR  | 6 MAR   | 25 APR  |
| SEEDRATE    |       |         |         |         |
| 78          | 4.71  | 4.75    | 4.92    | 5.45    |
| 156         | 4.89  | 4.80    | 5.02    | 4.71    |
| TRIDEMOR(2) | NONE  |         | SPRAYED |         |
| N TIME      | 6 MAR | 25 APR  | 6 MAR   | 25 APR  |
| S DATE T    |       |         |         |         |
| 6 OCT+T     | 6.05  | 5.05    | 5.81    | 5.60    |
| 6 OCT 0     | 5.09  | 5.39    | 6.13    | 5.35    |
| 2 NOV 0     | 3.33  | 3.61    | 2.88    | 4.57    |
| TRIDEMOR(2) | NONE  |         | SPRAYED |         |
| N TIME      | 6 MAR | 25 APR  | 6 MAR   | 25 APR  |
| SEEDRATE    |       |         |         |         |
| 78          | 5.05  | 5.38    | 4.58    | 4.82    |
| 156         | 4.60  | 3.99    | 5.30    | 5.52    |
| TRIDEMOR(2) | NONE  |         | SPRAYED |         |
| N TIME      | 6 MAR | 25 APR  | 6 MAR   | 25 APR  |
| TRIDEMOR(1) |       |         |         |         |
| NONE        | 4.55  | 4.34    | 5.05    | 5.22    |
| SPRAYED     | 5.10  | 5.03    | 4.83    | 5.13    |

78/R/B/2

GRAIN TONNES/HECTARE

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

| TABLE | S DATE T | SEEDRATE | TRIDEMOR(1) | TRIDEMOR(2) |
|-------|----------|----------|-------------|-------------|
| SED   | 0.188    | 0.154    | 0.154       | 0.154       |

| TABLE | N TIME | S DATE T<br>SEEDRATE | S DATE T<br>TRIDEMOR(1) | SEEDRATE<br>TRIDEMOR(1) |
|-------|--------|----------------------|-------------------------|-------------------------|
| SED   | 0.154  | 0.267                | 0.267                   | 0.218                   |

| TABLE | S DATE T<br>TRIDEMOR(2) | SEEDRATE<br>TRIDEMOR(2) | TRIDEMOR(1)<br>TRIDEMOR(2) | S DATE T<br>N TIME |
|-------|-------------------------|-------------------------|----------------------------|--------------------|
| SED   | 0.267                   | 0.218                   | 0.218                      | 0.267              |

| TABLE | SEEDRATE<br>N TIME | TRIDEMOR(1)<br>N TIME | TRIDEMOR(2)<br>N TIME | S DATE T<br>SEEDRATE<br>TRIDEMOR(1) |
|-------|--------------------|-----------------------|-----------------------|-------------------------------------|
| SED   | 0.218              | 0.218                 | 0.218                 | 0.377                               |

| TABLE | S DATE T<br>SEEDRATE<br>TRIDEMOR(2) | S DATE T<br>TRIDEMOR(1)<br>TRIDEMOR(2) | SEEDRATE<br>TRIDEMOR(1)<br>TRIDEMOR(2) | S DATE T<br>SEEDRATE<br>N TIME |
|-------|-------------------------------------|----------------------------------------|----------------------------------------|--------------------------------|
| SED   | 0.377                               | 0.377                                  | 0.308                                  | 0.377                          |

| TABLE | S DATE T<br>TRIDEMOR(1)<br>N TIME | SEEDRATE<br>TRIDEMOR(1)<br>N TIME | S DATE T<br>TRIDEMOR(2)<br>N TIME | SEEDRATE<br>TRIDEMOR(2)<br>N TIME |
|-------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| SED   | 0.377                             | 0.308                             | 0.377                             | 0.308                             |

| TABLE | TRIDEMOR(1)<br>TRIDEMOR(2)<br>N TIME |
|-------|--------------------------------------|
| SED   | 0.308                                |

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

| STRATUM  | DF | SE    | CV%  |
|----------|----|-------|------|
| BLOCK.WP | 10 | 0.533 | 10.9 |

GRAIN MEAN DM% 84.9

PLOT AREA HARVESTED 0.00130