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# Yields of the Field Experiments 1986

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## 86/S/CS/1 Factors Affecting Yield - W. Wheat

### Rothamsted Research

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86/S/CS/1

# FACTORS AFFECTING YIELD

Object: To study the effects of a range of factors on the yield of w. wheat - Saxmundham.

Sponsors: F.V. Widdowson, A. Penny.

The 21st year, w. wheat.

For previous years see 66/C/30(t), 67/C/23(t), 68/C/39, 69-85/S/CS/1.

Design: The experiment was on two sites, one after beans and one after wheat. On each site the design was a single replicate of 8 whole plots split into 5 sub-plots.

Whole plot dimensions: Wheat after wheat: 8.5 x 18.3.  
Wheat after beans: 6.3 x 30.

Treatments: On each site, combinations of:-

## Whole plots

1. VARIETY Varieties:

GALAHAD  
MOULIN

2. MARCH N Nitrogen fertilizer (kg N) as urea on 25 Mar, 1986 in addition to a basal application of 50 kg N as (13:13:20) to the seedbed:

0  
60

3. PATHCONT Pest and pathogen control:

NONE None  
FULL Prochloraz at 0.40 kg with benomyl at 0.28 kg in 220 l on 30 Apr, 1986  
Propiconazole at 0.13 kg with captafol at 1.0 kg in 220 l on 13 June  
Carbendazim at 0.15 kg, maneb at 1.6 kg, tridemorph at 0.37 kg, captafol at 1.0 kg and pirimicarb at 0.14 kg in 220 l on 3 July

## Sub plots

4. APRIL N Total nitrogen fertilizer applied in spring (kg N) as 'Nitro-Chalk' (26% N) on 23 Apr:

| After beans | After wheat |
|-------------|-------------|
| 0           | 0           |
| 100         | 160         |
| 130         | 190         |
| 160         | 220         |
| 190         | 250         |

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Basal applications: Manures: (13:13:20) at 380 kg. Weedkillers: Isoproturon at 2.5 kg in 220 l. Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 1.8 l), fluroxypyr at 0.14 kg applied with the growth regulator in 220 l. Growth regulator: Chlormequat at 1.6 kg.

Seed: Varieties, sown at 400 seeds per square metre.

Cultivations, etc.: Ploughed between 28 Aug, 1985 and 8 Oct, date not recorded. Seedbed NPK applied, power harrowed, seed sown: 8 Oct. Isoproturon applied: 10 Oct. Remaining weedkillers applied with the growth regulator: 7 May, 1986. Combine harvested: 2 Sept.

NOTE: Mineral N content of soil to 90 cm depth and the nitrate content of the crop were assessed in autumn and spring. N content of grain was measured.

# WHEAT AFTER BEANS

## GRAIN TONNES/HECTARE

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

|          |      |      |      |      |      |      |
|----------|------|------|------|------|------|------|
| MARCH N  | 0    | 60   | MEAN |      |      |      |
| VARIETY  |      |      |      |      |      |      |
| GALAHAD  | 8.95 | 9.27 | 9.11 |      |      |      |
| MOULIN   | 8.72 | 9.12 | 8.92 |      |      |      |
| MEAN     | 8.84 | 9.20 | 9.02 |      |      |      |
| PATHCONT | NONE | FULL | MEAN |      |      |      |
| VARIETY  |      |      |      |      |      |      |
| GALAHAD  | 8.71 | 9.52 | 9.11 |      |      |      |
| MOULIN   | 8.40 | 9.44 | 8.92 |      |      |      |
| MEAN     | 8.55 | 9.48 | 9.02 |      |      |      |
| PATHCONT | NONE | FULL | MEAN |      |      |      |
| MARCH N  |      |      |      |      |      |      |
| 0        | 8.34 | 9.33 | 8.84 |      |      |      |
| 60       | 8.77 | 9.63 | 9.20 |      |      |      |
| MEAN     | 8.55 | 9.48 | 9.02 |      |      |      |
| APRIL N  | 0    | 100  | 130  | 160  | 190  | MEAN |
| VARIETY  |      |      |      |      |      |      |
| GALAHAD  | 7.59 | 9.19 | 9.43 | 9.59 | 9.77 | 9.11 |
| MOULIN   | 7.46 | 9.24 | 9.25 | 9.27 | 9.39 | 8.92 |
| MEAN     | 7.52 | 9.22 | 9.34 | 9.43 | 9.58 | 9.02 |
| APRIL N  | 0    | 100  | 130  | 160  | 190  | MEAN |
| MARCH N  |      |      |      |      |      |      |
| 0        | 6.80 | 8.92 | 9.35 | 9.44 | 9.68 | 8.84 |
| 60       | 8.24 | 9.51 | 9.33 | 9.42 | 9.49 | 9.20 |
| MEAN     | 7.52 | 9.22 | 9.34 | 9.43 | 9.58 | 9.02 |

86/S/CS/1 WHEAT AFTER BEANS

GRAIN TONNES/HECTARE

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

|          |      |      |      |       |       |      |
|----------|------|------|------|-------|-------|------|
| APRIL N  | 0    | 100  | 130  | 160   | 190   | MEAN |
| PATHCONT |      |      |      |       |       |      |
| NONE     | 7.48 | 8.63 | 8.82 | 8.81  | 9.03  | 8.55 |
| FULL     | 7.57 | 9.80 | 9.85 | 10.05 | 10.14 | 9.48 |
| MEAN     | 7.52 | 9.22 | 9.34 | 9.43  | 9.58  | 9.02 |

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

| TABLE | APRIL N | VARIETY*<br>APRIL N | MARCH N*<br>APRIL N | PATHCONT*<br>APRIL N |
|-------|---------|---------------------|---------------------|----------------------|
| SED   | 0.088   | 0.125               | 0.125               | 0.125                |

\* WITHIN THE SAME LEVEL OF VARIETY, MARCH N OR PATHCONT ONLY

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

| STRATUM | DF | SE    | CV% |
|---------|----|-------|-----|
| WP.SP   | 16 | 0.177 | 2.0 |

GRAIN MEAN DM% 84.4

SUB PLOT AREA HARVESTED 0.00186

WHEAT AFTER WHEAT

GRAIN TONNES/HECTARE

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

|          |      |      |      |
|----------|------|------|------|
| MARCH N  | 0    | 60   | MEAN |
| VARIETY  |      |      |      |
| GALAHAD  | 6.71 | 7.83 | 7.27 |
| MOULIN   | 6.21 | 7.49 | 6.85 |
| MEAN     | 6.46 | 7.66 | 7.06 |
| PATHCONT | NONE | FULL | MEAN |
| VARIETY  |      |      |      |
| GALAHAD  | 7.31 | 7.23 | 7.27 |
| MOULIN   | 6.78 | 6.91 | 6.85 |
| MEAN     | 7.05 | 7.07 | 7.06 |
| PATHCONT | NONE | FULL | MEAN |
| MARCH N  |      |      |      |
| 0        | 6.58 | 6.33 | 6.46 |
| 60       | 7.51 | 7.81 | 7.66 |
| MEAN     | 7.05 | 7.07 | 7.06 |

86/S/CS/1 WHEAT AFTER WHEAT

GRAIN TONNES/HECTARE

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

|          |      |      |      |      |      |      |
|----------|------|------|------|------|------|------|
| APRIL N  | 0    | 160  | 190  | 220  | 250  | MEAN |
| VARIETY  |      |      |      |      |      |      |
| GALAHAD  | 3.56 | 8.04 | 7.97 | 8.23 | 8.55 | 7.27 |
| MOULIN   | 3.64 | 7.51 | 7.91 | 7.39 | 7.79 | 6.85 |
| MEAN     | 3.60 | 7.77 | 7.94 | 7.81 | 8.17 | 7.06 |
| APRIL N  | 0    | 160  | 190  | 220  | 250  | MEAN |
| MARCH N  |      |      |      |      |      |      |
| 0        | 2.22 | 7.25 | 7.59 | 7.38 | 7.84 | 6.46 |
| 60       | 4.98 | 8.29 | 8.28 | 8.25 | 8.50 | 7.66 |
| MEAN     | 3.60 | 7.77 | 7.94 | 7.81 | 8.17 | 7.06 |
| APRIL N  | 0    | 160  | 190  | 220  | 250  | MEAN |
| PATHCONT |      |      |      |      |      |      |
| NONE     | 3.64 | 7.89 | 7.73 | 8.01 | 7.96 | 7.05 |
| FULL     | 3.56 | 7.65 | 8.14 | 7.61 | 8.38 | 7.07 |
| MEAN     | 3.60 | 7.77 | 7.94 | 7.81 | 8.17 | 7.06 |

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

| TABLE | APRIL N | VARIETY*<br>APRIL N | MARCH N*<br>APRIL N | PATHCONT*<br>APRIL N |
|-------|---------|---------------------|---------------------|----------------------|
| SED   | 0.239   | 0.338               | 0.338               | 0.338                |

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

| STRATUM | DF | SE    | CV% |
|---------|----|-------|-----|
| WP.SP   | 16 | 0.477 | 6.8 |

GRAIN MEAN DM% 83.5

SUB PLOT AREA HARVESTED 0.00126