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# Yields of the Field Experiments 1975

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## Winter Wheat

### Rothamsted Research

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75/R/WW/1 and 75/W/WW/1

# WINTER WHEAT

## VARIETIES, N, CCC AND FUNGICIDE

**Object:** To study the yields and flour quality of a selection of the newer varieties of winter wheat and the effects of nitrogen, chlormequat and fungicides on land in rotation (pathogen free) and after several cereals (pathogen infected) - Rothamsted (R) Pastures (pathogen free) and Great Harpenden I (pathogen infected) and Woburn (W) Lansome III (pathogen free).

**Sponsor:** R. Moffitt, J.F. Jenkyn, D.B. Slope.

**Design:** 4 randomised blocks of 8 plots split into 4 with confounding.

**Whole plot dimensions:** 4.27 x 27.1.

**Treatments:** All combinations of:-

Whole plots: 1. Varieties:

|                | VARIETY |
|----------------|---------|
| Atou           | AT      |
| Bouquet        | BO      |
| Cappelle       | CA      |
| Flinor         | FL      |
| Maris Freeman  | FR      |
| Maris Fundin   | FU      |
| Maris Huntsman | HU      |
| Maris Templar  | TE      |

Sub plots: 2. Nitrogen fertiliser (kg N):

| Pastures (RH)                     | Gt. Harpenden I (RD) and<br>Lansome III (WH) | (RH)  | (RD & WH) |
|-----------------------------------|----------------------------------------------|-------|-----------|
| None                              | 63 in spring                                 | 0     | 63        |
| 63 in spring                      | 126 in spring                                | 63    | 126       |
| 126 in spring                     | 189 in spring                                | 126   | 189       |
| 63 in spring + 63<br>at flowering | 126 in spring + 63<br>at flowering           | 63+63 | 126+63    |

3. Chlormequat (kg):

|      | CCC |
|------|-----|
| None | 0.0 |
| 1.7  | 1.7 |

4. Fungicide in early May:

|             | FUNGICIDE(1) |
|-------------|--------------|
| None        | NONE         |
| Carbendazim | CARBENDA     |

5. Fungicides at flowering:

|                          | FUNGICIDE(2) |
|--------------------------|--------------|
| None                     | NONE         |
| Carbendazim + tridemorph | CARB/TRI     |

**NOTE:** Treatment 4 was not applied on Lansome III (W).

75/R/WW/1 and 75/W/WW/1

Basal applications:

Manures:

Pastures (RH), and Great Harpenden I (RD): (0:20:20) at 310 kg, combine drilled.

Lansome III (WH): (0:20:20) at 290 kg, combine drilled.

Weedkillers:

Pastures (RH): Mecoprop at 1.7 kg plus bromoxynil at 0.14 kg with ioxynil at 0.21 kg and dichlorprop at 0.42 kg in 220 l.

Great Harpenden I (RD): MCPA, mecoprop and dicamba ('Banlene Plus' at 5.6 kg in 220 l).

Lansome III (WH): Ioxynil at 0.63 kg with mecoprop at 1.9 kg in 280 l.

Seed: Sown at 200 kg.

Cultivations, etc.:-

Great Harpenden I (RD): Ploughed: 22 Oct, 1974. Rotary harrowed: 5 Dec.

Seed sown: 6 Dec. N applied: 18 Apr, 1975. Weedkiller applied: 12 May.

Fungicide applied: 15 May. Chlormequat applied: 20 May. Late N, and fungicides applied: 18 June. Combine harvested: 19 Aug. Previous crops: Barley 1973, winter wheat 1974.

Pastures (RH): Chisel ploughed twice: 9-10 Dec, 1974. Rotary cultivated, seed sown: 20 Dec. N applied: 18 Apr, 1975. Weedkiller applied: 9 May. Fungicide applied: 15 May. Chlormequat applied: 20 May. Late N, and fungicides applied: 18 June. Combine harvested: 15 Aug. Previous crops: Beans 1973, potatoes 1974.

Lansome III (WH): Deep-tine cultivated twice: 31 Oct, 6 Nov, 1974. Spring-tine cultivated twice: 8 Nov, 25 Nov. Seed sown: 26 Nov. N applied: 11 Apr, 1975. Weedkiller applied: 9 May. Chlormequat applied: 22 May. Late N applied: 23 June. Fungicides applied: 1 July. Combine harvested: 15 Aug. Previous crops: Beans 1973, potatoes 1974.

- NOTES: (1) Pastures (RH): Samples were taken for assessments of foliar diseases.  
(2) Great Harpenden I (RD): Samples were taken for estimates of eyespot (*Cercospora herpotrichoides*) and take-all (*Gaeumannomyces graminis*).  
(3) Grain samples were taken from all sites at harvest for assessments of flour quality.

## 75/R/WW/1 PASTURES (RH) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

| VARIETY<br>N | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|--------------|------|------|------|------|------|------|------|------|------|
| 0            | 5.57 | 5.36 | 5.03 | 4.94 | 6.15 | 4.90 | 5.76 | 5.32 | 5.38 |
| 63           | 7.42 | 7.38 | 7.16 | 6.84 | 7.27 | 7.01 | 7.68 | 7.74 | 7.31 |
| 126          | 8.01 | 7.88 | 7.58 | 7.69 | 8.01 | 7.77 | 8.10 | 8.11 | 7.89 |
| 63+63        | 8.34 | 8.14 | 7.95 | 7.62 | 7.73 | 8.22 | 7.89 | 8.36 | 8.03 |
| MEAN         | 7.33 | 7.19 | 6.93 | 6.78 | 7.29 | 6.97 | 7.36 | 7.38 | 7.15 |

| VARIETY<br>CCC | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|----------------|------|------|------|------|------|------|------|------|------|
| 0.0            | 7.09 | 7.08 | 6.79 | 6.46 | 7.51 | 6.86 | 7.23 | 7.54 | 7.07 |
| 1.7            | 7.58 | 7.30 | 7.07 | 7.10 | 7.08 | 7.09 | 7.48 | 7.22 | 7.24 |
| MEAN           | 7.33 | 7.19 | 6.93 | 6.78 | 7.29 | 6.97 | 7.36 | 7.38 | 7.15 |

| VARIETY<br>FUNGICIDE(1) | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|-------------------------|------|------|------|------|------|------|------|------|------|
| NONE                    | 7.39 | 7.04 | 7.03 | 6.50 | 7.30 | 6.87 | 7.45 | 7.37 | 7.12 |
| CARBENDA                | 7.28 | 7.34 | 6.82 | 7.05 | 7.29 | 7.07 | 7.27 | 7.39 | 7.19 |
| MEAN                    | 7.33 | 7.19 | 6.93 | 6.78 | 7.29 | 6.97 | 7.36 | 7.38 | 7.15 |

| VARIETY<br>FUNGICIDE(2) | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|-------------------------|------|------|------|------|------|------|------|------|------|
| NONE                    | 7.33 | 7.16 | 6.86 | 6.66 | 6.85 | 6.97 | 7.39 | 7.17 | 7.05 |
| CARB/TRI                | 7.34 | 7.22 | 6.99 | 6.89 | 7.73 | 6.98 | 7.33 | 7.59 | 7.26 |
| MEAN                    | 7.33 | 7.19 | 6.93 | 6.78 | 7.29 | 6.97 | 7.36 | 7.38 | 7.15 |

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

| TABLE | N     | CCC   | FUNGICIDE(1) | FUNGICIDE(2) |
|-------|-------|-------|--------------|--------------|
| SED   | 0.148 | 0.105 | 0.105        | 0.105        |

| TABLE                                              | VARIETY | N     | VARIETY |
|----------------------------------------------------|---------|-------|---------|
| SED                                                | 0.168   | 0.400 |         |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: |         |       |         |
| VARIETY                                            |         | 0.419 |         |

| TABLE                                              | CCC     | FUNGICIDE(1) | FUNGICIDE(2) |
|----------------------------------------------------|---------|--------------|--------------|
|                                                    | VARIETY | VARIETY      | VARIETY      |
| SED                                                | 0.268   | 0.268        | 0.268        |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: |         |              |              |
| VARIETY                                            | 0.297   | 0.297        | 0.297        |

75/R/WW/1 GT HARPENDEN I (RD) PATHOGEN INFECTED

GRAIN TONNES/HECTARE

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

| VARIETY<br>N | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|--------------|------|------|------|------|------|------|------|------|------|
| 63           | 5.01 | 5.30 | 4.39 | 3.83 | 4.76 | 3.92 | 4.63 | 4.99 | 4.60 |
| 126          | 6.36 | 6.07 | 5.77 | 5.35 | 5.83 | 6.20 | 6.01 | 6.59 | 6.02 |
| 189          | 5.72 | 5.70 | 5.50 | 6.12 | 5.67 | 6.02 | 6.40 | 6.50 | 5.95 |
| 126+63       | 6.28 | 5.94 | 5.78 | 6.19 | 6.62 | 5.53 | 6.25 | 6.94 | 6.19 |
| MEAN         | 5.84 | 5.75 | 5.36 | 5.37 | 5.72 | 5.42 | 5.82 | 6.26 | 5.69 |

| VARIETY<br>CCC | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|----------------|------|------|------|------|------|------|------|------|------|
| 0.0            | 6.22 | 5.71 | 5.27 | 5.42 | 5.87 | 5.63 | 5.79 | 6.20 | 5.76 |
| 1.7            | 5.46 | 5.80 | 5.45 | 5.33 | 5.57 | 5.21 | 5.85 | 6.32 | 5.62 |
| MEAN           | 5.84 | 5.75 | 5.36 | 5.37 | 5.72 | 5.42 | 5.82 | 6.26 | 5.69 |

| VARIETY<br>FUNGCIDE(1) | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|------------------------|------|------|------|------|------|------|------|------|------|
| NONE                   | 5.79 | 5.70 | 5.45 | 5.36 | 5.95 | 5.13 | 5.89 | 6.13 | 5.67 |
| CARBENDA               | 5.89 | 5.81 | 5.27 | 5.39 | 5.49 | 5.70 | 5.75 | 6.38 | 5.71 |
| MEAN                   | 5.84 | 5.75 | 5.36 | 5.37 | 5.72 | 5.42 | 5.82 | 6.26 | 5.69 |

| VARIETY<br>FUNGCIDE(2) | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|------------------------|------|------|------|------|------|------|------|------|------|
| NONE                   | 5.64 | 5.88 | 5.23 | 5.41 | 5.67 | 5.48 | 5.88 | 6.24 | 5.68 |
| CARB/TRI               | 6.04 | 5.63 | 5.49 | 5.34 | 5.77 | 5.35 | 5.76 | 6.28 | 5.71 |
| MEAN                   | 5.84 | 5.75 | 5.36 | 5.37 | 5.72 | 5.42 | 5.82 | 6.26 | 5.69 |

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

| TABLE | N     | CCC   | FUNGCIDE(1) | FUNGCIDE(2) |
|-------|-------|-------|-------------|-------------|
| SED   | 0.140 | 0.099 | 0.099       | 0.099       |

| TABLE                                                         | VARIETY | N<br>VARIETY |
|---------------------------------------------------------------|---------|--------------|
| SED                                                           | 0.217   | 0.406        |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:<br>VARIETY |         |              |
|                                                               | 0.396   |              |

| TABLE                                                         | CCC     | FUNGCIDE(1) | FUNGCIDE(2) |
|---------------------------------------------------------------|---------|-------------|-------------|
|                                                               | VARIETY | VARIETY     | VARIETY     |
| SED                                                           | 0.294   | 0.294       | 0.294       |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:<br>VARIETY |         |             |             |
|                                                               | 0.280   | 0.280       | 0.280       |

75/W/WW/1 LANSOME III (W) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

| VARIETY<br>N | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|--------------|------|------|------|------|------|------|------|------|------|
| 63           | 3.37 | 3.71 | 3.60 | 3.26 | 3.69 | 2.66 | 3.34 | 3.95 | 3.45 |
| 126          | 3.82 | 4.42 | 4.06 | 4.33 | 4.68 | 3.19 | 4.11 | 4.33 | 4.12 |
| 189          | 4.16 | 4.19 | 4.01 | 4.59 | 3.86 | 3.25 | 3.86 | 4.33 | 4.03 |
| 126+63       | 4.14 | 4.34 | 4.11 | 4.44 | 4.06 | 2.78 | 4.05 | 4.56 | 4.06 |
| MEAN         | 3.87 | 4.17 | 3.95 | 4.16 | 4.07 | 2.97 | 3.84 | 4.29 | 3.91 |

| VARIETY<br>CCC | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|----------------|------|------|------|------|------|------|------|------|------|
| 0.0            | 3.90 | 4.08 | 3.96 | 4.21 | 4.16 | 3.22 | 3.68 | 4.44 | 3.96 |
| 0.7            | 3.84 | 4.26 | 3.93 | 4.10 | 3.99 | 2.71 | 4.00 | 4.15 | 3.87 |
| MEAN           | 3.87 | 4.17 | 3.95 | 4.16 | 4.07 | 2.97 | 3.84 | 4.29 | 3.91 |

| VARIETY<br>FUNGCIDE(2) | AT   | BO   | CA   | FL   | FR   | FU   | HU   | TE   | MEAN |
|------------------------|------|------|------|------|------|------|------|------|------|
| NONE                   | 4.05 | 4.13 | 3.75 | 3.94 | 4.04 | 2.98 | 3.86 | 4.03 | 3.85 |
| CARB/TRI               | 3.69 | 4.20 | 4.14 | 4.37 | 4.11 | 2.96 | 3.82 | 4.56 | 3.98 |
| MEAN                   | 3.87 | 4.17 | 3.95 | 4.16 | 4.07 | 2.97 | 3.84 | 4.29 | 3.91 |

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

| TABLE | N     | CCC   | FUNGCIDE(2) | VARIETY |
|-------|-------|-------|-------------|---------|
| SED   | 0.100 | 0.071 | 0.071       | 0.334   |

| TABLE | N<br>VARIETY | CCC<br>VARIETY | FUNGCIDE(2)<br>VARIETY |
|-------|--------------|----------------|------------------------|
| SED   | 0.414        | 0.362          | 0.362                  |

EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:  
VARIETY 0.283      0.200      0.200

75/R/WW/1 PASTURES (RH) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

| STRATUM     | DF | SE    | CV% |
|-------------|----|-------|-----|
| BLOCK.WP    | 17 | 0.237 | 3.3 |
| BLOCK.WP.SP | 40 | 0.593 | 8.3 |

GRAIN MEAN DM% 86.0

SUB PLOT AREA HARVESTED 0.00173

75/R/WW/1 GT HARPENDEN I (RD) PATHOGEN INFECTED

GRAIN TONNES/HECTARE

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

| STRATUM     | DF | SE    | CV% |
|-------------|----|-------|-----|
| BLOCK.WP    | 17 | 0.306 | 5.4 |
| BLOCK.WP.SP | 40 | 0.561 | 9.8 |

GRAIN MEAN DM% 88.4

SUB PLOT AREA HARVESTED 0.00001

75/W/WW/1 LANSOME III (W) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

| STRATUM     | DF | SE    | CV%  |
|-------------|----|-------|------|
| BLOCK.WP    | 6  | 0.472 | 12.1 |
| BLOCK.WP.SP | 14 | 0.401 | 10.2 |

GRAIN MEAN DM% 86.1

SUB PLOT AREA HARVESTED 0.00173

75/R/WW/2

WINTER WHEAT

FOLIAR DISEASES

Object: To study the effects of different amounts of infected straw, seed infection and seed dressing on incidence of Septoria and yield of winter wheat - Pastures.

Sponsors: J.F. Jenkyn, J. King (M.A.F.F.).

Design: 2 randomised blocks of 12 plots.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

- |                                                                |           |
|----------------------------------------------------------------|-----------|
| 1. Rate of applying straw, infected with Septoria, to seedbed: | STRAW RT  |
| None                                                           | NONE      |
| Little (66 kg/ha)                                              | LITTLE    |
| Much (584 kg/ha)                                               | MUCH      |
| 2. Seed infection with Septoria:                               | SEED INF  |
| None                                                           | NONE      |
| Infected                                                       | INFECTED  |
| 3. Seed dressing:                                              | SEED DRS  |
| None                                                           | NONE      |
| Fungicide (Mercury as, 'Agrosan GN', at<br>2.2 g/kg of seed)   | FUNGICIDE |

Basal applications: Manures: (0:20:20) at 250 kg combine drilled. 'Nitro-Chalk' at 240 kg. Weedkillers: Mecoprop ('Compitox Extra' at 2.8 l) plus bromoxynil with ioxynil ('Oxytril CM' at 1.4 l) in 220 l. Growth regulator: Chlormequat ('Cycocel' at 4.2 l in 340 l). Irrigation: 5 mm applied on each of 7 occasions.

Seed: Cappelle, sown at 200 kg.

Cultivations, etc.: Chisel ploughed twice: 9 Dec, 1974. Spring-tine cultivated, straw applied and all plots rotary cultivated: 10 Dec. Seed sown and cultivated in: 18 Dec. N applied: 5 Apr, 1975. Weedkiller applied: 9 May. Growth regulator applied: 20 May. Water applied: 25, 26 and 28 June, 5, 12, 19 and 26 July. Combine harvested: 13 Aug. Previous crops: Beans 1973, potatoes 1974.

NOTE: Septoria was assessed on the seedlings and again on 16 and 28 July.

75/R/WW/2

GRAIN TONNES/HECTARE

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

| SEED INF | NONE | INFECTED | MEAN |
|----------|------|----------|------|
| STRAW RT |      |          |      |
| NONE     | 7.12 | 6.85     | 6.98 |
| LITTLE   | 6.69 | 6.95     | 6.82 |
| MUCH     | 6.32 | 6.71     | 6.51 |
| MEAN     | 6.71 | 6.83     | 6.77 |

| SEED DRS | NONE | FUNGCIDE | MEAN |
|----------|------|----------|------|
| STRAW RT |      |          |      |
| NONE     | 6.48 | 7.49     | 6.98 |
| LITTLE   | 6.63 | 7.01     | 6.82 |
| MUCH     | 6.16 | 6.86     | 6.51 |
| MEAN     | 6.43 | 7.12     | 6.77 |

| SEED DRS | NONE | FUNGCIDE | MEAN |
|----------|------|----------|------|
| SEED INF |      |          |      |
| NONE     | 6.38 | 7.05     | 6.71 |
| INFECTED | 6.47 | 7.20     | 6.83 |
| MEAN     | 6.43 | 7.12     | 6.77 |

| SEED INF | NONE | INFECTED |      |          |
|----------|------|----------|------|----------|
| SEED DRS | NONE | FUNGCIDE | NONE | FUNGCIDE |
| STRAW RT |      |          |      |          |
| NONE     | 6.72 | 7.52     | 6.25 | 7.45     |
| LITTLE   | 6.58 | 6.80     | 6.68 | 7.22     |
| MUCH     | 5.83 | 6.82     | 6.50 | 6.91     |

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

| TABLE | STRAW RT | SEED INF | SEED DRS | STRAW RT<br>SEED INF |
|-------|----------|----------|----------|----------------------|
| SED   | 0.165    | 0.134    | 0.134    | 0.233                |

| TABLE | STRAW RT<br>SEED DRS | SEED INF<br>SEED DRS | STRAW RT<br>SEED INF<br>SEED DRS |
|-------|----------------------|----------------------|----------------------------------|
| SED   | 0.233                | 0.190                | 0.329                            |

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

| STRATUM  | DF | SE    | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 11 | 0.329 | 4.9 |

GRAIN MEAN DM% 86.4

PLOT AREA HARVESTED 0.00260

75/R/WW/3

WINTER WHEAT

SEED DRESSINGS AND SEPTORIA

Object: To study the importance and efficiency of organo-mercury and non-mercury seed dressings against certain pathogens, particularly Septoria seedling blight. Also to study the importance of seedling infections in the epidemiology of the disease - Pastures.

Sponsor: G.L. Bateman.

Design: 2 blocks of 15 plots.

Whole plot dimensions: 2.41 x 11.6.

Treatments: Seed dressings, to seed infected with Septoria (per kg seed):

|                                                        | SEEDRESS |
|--------------------------------------------------------|----------|
| None (3 plots per block)                               | 0        |
| Phenyl mercury acetate at 1 mg Hg) (2 plots            | PMA 1    |
| Phenyl mercury acetate at 5 mg Hg) each per            | PMA 5    |
| Phenyl mercury acetate at 25 mg Hg) block)             | PMA 25   |
| Carboxin at 4.5 g (a.i.)                               | CARBOXIN |
| Guazatine at 0.8 g (a.i.)                              | GUAZATIN |
| Guazatine at 0.6 g + maneb at 0.6 g (a.i.)             | GUAZ/MAN |
| Maneb at 3.2 g (a.i.)                                  | MANEB    |
| Quinacetol sulphate at 0.27 g + maneb at 0.45 g (a.i.) | QUIN/MAN |
| Thiabendazole at 2.4 g (a.i.)                          | THIABEND |

Basal applications: Manures: 'Nitro-Chalk' at 380 kg.

Seed: Chalk, sown at 200 kg.

Cultivations, etc.: - Chisel ploughed twice: 9 Dec, 1974. Rotary harrowed: 19 Dec. Seed sown: 20 Dec. N applied: 21 Apr, 1975. Combine harvested: 18 Aug. Previous crops: Beans 1973, potatoes 1974.

NOTE: Counts were made of seedling emergence. Assessments were made of seedlings infected by Septoria, and on one occasion of leaf infection by Septoria, mildew and eyespot.

75/R/WW/3

GRAIN TONNES/HECTARE

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

|          |      |
|----------|------|
| SEEDRESS |      |
| 0        | 7.27 |
| PMA 1    | 7.40 |
| PMA 5    | 7.25 |
| PMA 25   | 7.08 |
| CARBOXIN | 7.16 |
| GUAZATIN | 7.01 |
| GUAZ/MAN | 7.11 |
| MANEB    | 7.08 |
| QUIN/MAN | 7.30 |
| THIABEND | 7.36 |
| MEAN     | 7.22 |

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

| TABLE | SEEDRESS  |
|-------|-----------|
| SED   | 0.175 (1) |
|       | 0.222 (2) |
|       | 0.192 (3) |
|       | 0.235 (4) |
|       | 0.272 (5) |

- (1) O V ANY OF PMA
- (2) O V ANY OF REMAINDER (EXCLUDING O AND PMA)
- (3) PMA
- (4) PMA V ANY OF REMAINDER
- (5) ANY OF REMAINDER

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

| STRATUM  | DF | SE    | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 19 | 0.272 | 3.8 |

GRAIN MEAN DM% 85.0

PLOT AREA HARVESTED 0.00126

75/R/WW/4

# WINTER AND SPRING WHEAT

## SOWING DATES AND INSECTICIDES

Object: To study the effects of dates of sowing and times of applying insecticides on the incidence of cereal aphids, barley yellow dwarf virus (BYDV) and yield of winter wheat - Whittlocks.

Sponsor: R.T. Plumb.

Design: 4 randomised blocks of 12 plots.

Whole plot dimensions: 6.40 x 24.4.

Treatments: All combinations of:-

|                                                         |                |
|---------------------------------------------------------|----------------|
| 1. Dates of sowing:                                     | SOW DATE       |
| 8 November 1974                                         | 8 NOV          |
| 5 December 1974                                         | 5 DEC          |
| 27 February 1975                                        | 27 FEB         |
| 2. Phorate granules to seedbed:                         | INSECTICIDE(1) |
| None                                                    | NONE           |
| Phorate at 5 kg                                         | PHORATE        |
| 3. Menazon spray:                                       | INSECTICIDE(2) |
| None                                                    | NONE           |
| Menazon (0.7 l 'Saphi-Col' in 450 l<br>on 13 June 1975) | MENAZON        |

NOTE: It was intended to sow winter wheat in September, October and November, but because of poor weather, only two autumn sowings were possible and the third series of plots were sown with spring wheat on 27 February.

Seed: Winter wheat: Cappelle, sown at 200 kg.  
Spring wheat: Kleiber, sown at 200 kg.

Basal applications: Manures: (10:24:24) at 250 kg, 'Nitro-Chalk' at 500 kg.

Cultivations, etc.: Ploughed: 25 Sept to 9 Oct, 1974. Spring-tine cultivated twice: 7 Nov. Phorate applied, plots rotary cultivated, seed sown: 8 Nov. Phorate applied and plots power harrowed, seed sown: 5 Dec. Phorate applied, plots power harrowed, seed sown: 27 Feb, 1975. N applied to all plots: 20 Apr. Combine harvested: November and December sowing: 14 Aug, February sowing: 28 Aug. Previous crops: Barley 1973, Oats 1974.

NOTE: Aphid counts were made on 24 Apr, 22 May, 11 June, 4, 10 and 21 July, virus counts on 26 June and 4 July. Ear weights and grain numbers prior to harvest and 1,000 grain weights were determined.

75/R/WW/4

GRAIN TONNES/HECTARE

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

| INSC TCDE(1) | NONE | PHORATE | MEAN |
|--------------|------|---------|------|
| SOW DATE     |      |         |      |
| 8 NOV        | 5.90 | 5.99    | 5.94 |
| 5 DEC        | 5.59 | 5.74    | 5.66 |
| 27 FEB       | 3.73 | 4.27    | 4.02 |
| MEAN         | 5.09 | 5.33    | 5.21 |

| INSC TCDE(2) | NONE | MENAZON | MEAN |
|--------------|------|---------|------|
| SOW DATE     |      |         |      |
| 8 NOV        | 5.98 | 5.91    | 5.94 |
| 5 DEC        | 5.60 | 5.73    | 5.66 |
| 27 FEB       | 4.01 | 4.03    | 4.02 |
| MEAN         | 5.20 | 5.22    | 5.21 |

| INSC TCDE(2) | NONE | MENAZON | MEAN |
|--------------|------|---------|------|
| INSC TCDE(1) |      |         |      |
| NONE         | 5.01 | 5.17    | 5.09 |
| PHORATE      | 5.39 | 5.28    | 5.33 |
| MEAN         | 5.20 | 5.22    | 5.21 |

| INSC TCDE(1) | NONE | MENAZON | PHORATE | MENAZON |
|--------------|------|---------|---------|---------|
| INSC TCDE(2) | NONE |         | NONE    |         |
| SOW DATE     |      |         |         |         |
| 8 NOV        | 5.94 | 5.86    | 6.02    | 5.96    |
| 5 DEC        | 5.47 | 5.72    | 5.74    | 5.74    |
| 27 FEB       | 3.61 | 3.94    | 4.41    | 4.13    |

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

| TABLE | SOW DATE | INSC TCDE(1) | INSC TCDE(2) | SOW DATE     |
|-------|----------|--------------|--------------|--------------|
|       |          |              |              | INSC TCDE(1) |
| SED   | 0.145    | 0.113        | 0.113        | 0.205        |

| TABLE | SOW DATE     | INSC TCDE(1) | SOW DATE     |
|-------|--------------|--------------|--------------|
|       | INSC TCDE(2) | INSC TCDE(2) | INSC TCDE(1) |
|       |              |              | INSC TCDE(2) |
| SED   | 0.205        | 0.167        | 0.290        |

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

| STRATUM  | DF | SE    | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 33 | 0.410 | 7.9 |

GRAIN MEAN DM% 87.3

PLOT AREA HARVESTED 0.00390

294

75/R/WW/5

# WINTER WHEAT

## RATES AND TIMES OF N AND VARIETIES

Object: To study the physiological basis of the response of three varieties of wheat to a wide range of nitrogen levels - Long Hoos IV 6.

Sponsor: G.N. Thorne.

Design: 2 blocks of 24 plots.

Whole plot dimensions: 1.65 x 9.76.

Treatments: All combinations of:-

### 1. Varieties:

Cappelle  
Maris Fundin  
Maris Huntsman

### VARIETY

CAPPELLE  
FUNDIN  
HUNTSMAN

### 2. Nitrogen fertiliser, as 'Nitro-Chalk' (kg N):

None  
30  
60  
90  
120  
150  
180  
210

### N

0  
30  
60  
90  
120  
150  
180  
210

Basal applications: Manures: (0:14:28) at 820 kg. Fungicide: Tridemorph at 0.53 kg in 340 l. Iodine-benzanilide ('BASF 3170F' at 2.2 kg in 340 l).

Seed: Sown at 200 kg.

Cultivations, etc.: - Ploughed: 25 Sept, 1974. PK applied: 1 Oct.

Spring-tine cultivated: 14 Oct. Power harrowed and seed sown: 6 Nov.

'Nitro-Chalk' applied: 18 Apr, 1975. Tridemorph applied: 13 June.

Iodine-benzanilide applied: 16 June. Harvested by hand: 7 Aug.

Previous crops: Maize 1973, oats 1974.

NOTE: Plant counts were made after germination and shoot counts throughout the season. Dry weight and leaf areas were determined on six occasions between 19 June and 7 Aug. Soil moisture was measured from April to August. Light penetration of the canopy was measured in July. Rates of photosynthesis and translocation were measured twice in June and once in July. Respiration of shoots and ears was measured at the end of June.

75/R/WW/5

GRAIN TONNES/HECTARE

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

|          | N    | 0    | 30   | 60   | 90   | 120  | 150  | 180  | 210  | MEAN |
|----------|------|------|------|------|------|------|------|------|------|------|
| VARIETY  |      |      |      |      |      |      |      |      |      |      |
| CAPPELLE | 3.58 | 4.20 | 4.75 | 5.82 | 6.11 | 6.76 | 6.16 | 6.46 | 5.48 |      |
| FUNDIN   | 3.13 | 4.58 | 5.59 | 5.90 | 6.40 | 7.59 | 7.88 | 6.85 | 5.99 |      |
| HUNTSMAN | 3.42 | 4.04 | 5.40 | 6.40 | 6.61 | 6.97 | 6.60 | 7.01 | 5.81 |      |
| MEAN     | 3.38 | 4.27 | 5.24 | 6.04 | 6.37 | 7.11 | 6.88 | 6.77 | 5.76 |      |

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

| TABLE | VARIETY | N     | VARIETY |
|-------|---------|-------|---------|
|       |         |       | N       |
| SED   | 0.122   | 0.199 | 0.345   |

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

| STRATUM  | DF | SE    | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 23 | 0.345 | 6.0 |

GRAIN MEAN DM% 89.8

PLOT AREA HARVESTED 0.00023

75/R/WW/6

WINTER WHEAT

RATES AND TIMES OF N AND K

Object: To study the effects of a range of rates and times of applying nitrogen and potassium on the yield of wheat - Long Hoos III.

Sponsors: O. Talibudeen, A. Penny, M.B. Page.

Design: 2 randomised blocks of 2 plots split into 30.

Whole plot dimensions: 2.67 x 2.74.

Treatments: All combinations of:-

Whole plots: 1. Potassium

POTASH

None  
Potassium nitrate added to urea treatments  
(growth stages 6,10,11.1) to give a K:N  
ratio of 1:10.

-  
K

Sub plots: 2. Nitrogen rates and times (applied as 'Nitro-  
Chalk' at growth stage 2, as a 5% urea  
solution to later growth stages) kg N:

N

Growth stage

| 2         |   | 6          |   | 10      |   | 11.1    |      |
|-----------|---|------------|---|---------|---|---------|------|
| Early     |   | Early stem |   | In boot |   | Grain   |      |
| tillering |   | extension  |   |         |   | filling |      |
| 30        | + | 30         | + | 0       | + | 0       | 11-- |
| 30        | + | 30         | + | 0       | + | 30      | 11-1 |
| 30        | + | 30         | + | 0       | + | 60      | 11-2 |
| 30        | + | 30         | + | 30      | + | 0       | 111- |
| 30        | + | 30         | + | 30      | + | 30      | 1111 |
| 30        | + | 30         | + | 60      | + | 0       | 112- |
| 30        | + | 90         | + | 0       | + | 0       | 13-- |
| 30        | + | 90         | + | 0       | + | 30      | 13-1 |
| 30        | + | 90         | + | 0       | + | 60      | 13-2 |
| 30        | + | 90         | + | 30      | + | 0       | 131- |
| 30        | + | 90         | + | 30      | + | 30      | 1311 |
| 30        | + | 90         | + | 60      | + | 0       | 132- |
| 90        | + | 30         | + | 0       | + | 0       | 31-- |
| 90        | + | 30         | + | 0       | + | 30      | 31-1 |
| 90        | + | 30         | + | 0       | + | 60      | 31-2 |
| 90        | + | 30         | + | 30      | + | 0       | 311- |
| 90        | + | 30         | + | 30      | + | 30      | 3111 |
| 90        | + | 30         | + | 60      | + | 0       | 312- |
| 90        | + | 90         | + | 0       | + | 0       | 33-- |
| 90        | + | 90         | + | 0       | + | 30      | 33-1 |
| 90        | + | 90         | + | 0       | + | 60      | 33-2 |
| 90        | + | 90         | + | 30      | + | 0       | 331- |
| 90        | + | 90         | + | 30      | + | 30      | 3311 |
| 90        | + | 90         | + | 60      | + | 0       | 332- |

75/R/WW/6

plus six extra sub plots per whole plot not given  
POTASH but given N:

|     |   |   |   |   |   |   | EXTRA |
|-----|---|---|---|---|---|---|-------|
| 0   | + | 0 | + | 0 | + | 0 | ----  |
| 30  | + | 0 | + | 0 | + | 0 | 1---  |
| 60  | + | 0 | + | 0 | + | 0 | 2---  |
| 90  | + | 0 | + | 0 | + | 0 | 3---  |
| 120 | + | 0 | + | 0 | + | 0 | 4---  |
| 180 | + | 0 | + | 0 | + | 0 | 6---  |

NOTE: 'Nitro-Chalk' applied: 21 Apr. Urea and potassium nitrate applied:  
 21 May (stage 6), 18 June (stage 10), 16 July (stage 11.1).

Basal applications: Manures: (0:20:20) at 310 kg. Weedkillers: Ioxynil with  
 mecoprop ('Actril C' at 5.6 l in 280 l).

Seed: Cappelle, sown at 200 kg.

Cultivations, etc.: Ploughed: 18 Oct, 1974. Rotary cultivated: 28 Nov.

Seed sown: 29 Nov. Weedkiller applied: 22 May, 1975. Cut by hand:

18 Aug. Previous crops: Fallow 1973, winter oats 1974.

NOTE: Samples of grain and straw were taken at harvest for N determinations.

75/R/WW/6

WINTER WHEAT

GRAIN TONNES/HECTARE

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

| POTASH<br>N | -    | K    | MEAN |
|-------------|------|------|------|
| 11--        | 3.46 | 3.58 | 3.52 |
| 11-1        | 3.58 | 3.78 | 3.68 |
| 11-2        | 3.27 | 3.56 | 3.42 |
| 111-        | 3.89 | 3.51 | 3.70 |
| 1111        | 3.87 | 3.75 | 3.81 |
| 112-        | 3.93 | 3.74 | 3.83 |
| 13--        | 3.79 | 3.99 | 3.89 |
| 13-1        | 4.25 | 4.10 | 4.17 |
| 13-2        | 4.08 | 4.30 | 4.19 |
| 131-        | 4.24 | 4.22 | 4.23 |
| 1311        | 4.36 | 4.33 | 4.34 |
| 132-        | 4.27 | 4.36 | 4.31 |
| 31--        | 4.74 | 4.90 | 4.82 |
| 31-1        | 5.21 | 5.02 | 5.12 |
| 31-2        | 5.21 | 5.29 | 5.25 |
| 311-        | 5.09 | 4.93 | 5.01 |
| 3111        | 5.16 | 5.09 | 5.12 |
| 312-        | 5.04 | 5.55 | 5.29 |
| 33--        | 4.87 | 5.43 | 5.15 |
| 33-1        | 5.23 | 5.42 | 5.33 |
| 33-2        | 5.60 | 5.51 | 5.55 |
| 331-        | 5.23 | 5.65 | 5.44 |
| 3311        | 5.35 | 5.27 | 5.31 |
| 332-        | 5.79 | 5.41 | 5.60 |
| MEAN        | 4.56 | 4.61 | 4.59 |

NO POTASH APPLIED

| N          | ---- | 1--- | 2--- | 3--- | 4--- | 6--- | MEAN |
|------------|------|------|------|------|------|------|------|
|            | 1.90 | 3.26 | 4.12 | 4.83 | 5.32 | 5.47 | 4.15 |
| *          |      |      |      |      |      |      |      |
| GRAND MEAN | 4.50 |      |      |      |      |      |      |

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

| TABLE | N     | POTASH* |
|-------|-------|---------|
|       |       | N       |
| ----- |       |         |
| SED   | 0.222 | 0.314   |

\*WITHIN THE SAME LEVEL OF POTASH ONLY

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

| STRATUM        | DF   | SE    | CV% |
|----------------|------|-------|-----|
| BLOCK.WP.SP    | 63   | 0.314 | 7.0 |
| GRAIN MEAN DM% | 86.1 |       |     |

75/R/WW/6

WINTER WHEAT

STRAW TONNES/HECTARE

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

| POTASH | -    | K    | MEAN |
|--------|------|------|------|
| N      |      |      |      |
| 11--   | 4.38 | 4.78 | 4.58 |
| 11-1   | 4.61 | 4.70 | 4.66 |
| 11-2   | 4.21 | 4.50 | 4.36 |
| 111-   | 4.89 | 4.34 | 4.61 |
| 1111   | 4.82 | 4.64 | 4.73 |
| 112-   | 4.52 | 4.54 | 4.53 |
| 13--   | 4.70 | 4.84 | 4.77 |
| 13-1   | 4.51 | 4.86 | 4.69 |
| 13-2   | 5.25 | 4.95 | 5.10 |
| 131-   | 5.04 | 5.19 | 5.12 |
| 1311   | 4.85 | 5.30 | 5.08 |
| 132-   | 5.12 | 5.32 | 5.22 |
| 31--   | 6.08 | 6.32 | 6.20 |
| 31-1   | 6.70 | 6.36 | 6.53 |
| 31-2   | 6.70 | 6.92 | 6.81 |
| 311-   | 6.58 | 6.39 | 6.49 |
| 3111   | 6.69 | 6.67 | 6.68 |
| 312-   | 6.94 | 7.07 | 7.00 |
| 33--   | 6.16 | 6.92 | 6.54 |
| 33-1   | 6.78 | 7.19 | 6.99 |
| 33-2   | 7.26 | 6.93 | 7.10 |
| 331-   | 6.24 | 6.95 | 6.59 |
| 3311   | 6.56 | 6.64 | 6.60 |
| 332-   | 7.37 | 6.90 | 7.13 |
| MEAN   | 5.71 | 5.80 | 5.75 |

NO POTASH APPLIED

| N | ---- | 1--- | 2--- | 3--- | 4--- | 6--- | MEAN |
|---|------|------|------|------|------|------|------|
|   | 2.28 | 4.19 | 5.52 | 6.47 | 6.93 | 8.10 | 5.58 |

GRAND MEAN 5.72

STRAW MEAN DM% 83.2

SUB PLOT AREA HARVESTED 0.00048

75/R/WW/7

# WINTER WHEAT

## INSECTICIDES AND BULB FLY

Object: To study the effects of different insecticidal seed dressings on attack by wheat bulb fly (*Leptohylemyia coarctata*) and yield of winter wheat - Fosters West.

Sponsor: D.C. Griffiths.

Design: 4 randomised blocks of 8 plots.

Whole plot dimensions: 2.41 x 9.14.

Treatments: 1. Insecticides (% a.i. to wt. of seed):-

|                       |     | INSECTICIDE |
|-----------------------|-----|-------------|
| None                  |     | NONE        |
| Chlorfenvinphos       | 0.2 | CHLORFEN    |
| Fonofos               | 0.2 | FONOFOS     |
| Isophenphos           | 0.2 | ISOPH 2     |
| Isophenphos           | 0.5 | ISOPH 5     |
| Permethrin (NRDC 143) | 0.2 | PERMETHR    |
| Pirimiphos ethyl      | 0.2 | PIRIMIPH    |
| Triazophos            | 0.2 | TRIAZOPH    |

Basal applications: Manures: 'Nitro-Chalk' at 410 kg. Weedkiller: Ioxynil with mecoprop ('Actril C' at 7.0 l in 220 l).

Seed: Maris Templar, sown at 180 kg.

Cultivations, etc.: Rotary harrowed: 5 Dec, 1974. Seed sown: 10 Dec. N applied: 25 Apr, 1975. Weedkiller applied: 19 May. Combine harvested: 15 Aug. Previous crops: Barley 1973, fallow 1974.

NOTE: Amounts of insecticides on seed were determined. Plant emergence counts were made in January and samples were taken in March for determination of number of damaged shoots and percentage with live wheat bulb fly larvae.

75/R/WW/7

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

GRAIN TONNES/HECTARE

|          |      |
|----------|------|
| INSCDCDE |      |
| NONE     | 4.62 |
| CHLORFEN | 5.88 |
| FONOFOS  | 5.74 |
| ISOPH 2  | 6.10 |
| ISOPH 5  | 5.58 |
| PERMETHR | 5.99 |
| PIRIMIPH | 5.52 |
| TRIAZOPH | 5.32 |
| MEAN     | 5.59 |

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

| TABLE | INSCDCDE |
|-------|----------|
| SED   | 0.395    |

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

| STRATUM  | DF | SE    | CV%  |
|----------|----|-------|------|
| BLOCK.WP | 21 | 0.559 | 10.0 |

GRAIN MEAN DM% 86.5

PLOT AREA HARVESTED 0.00151