

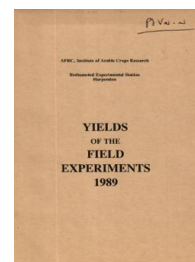
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## Yields of the Field Experiments 1989

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### 89/R/B/4 Varieties and Bydv - W. Barley

#### Rothamsted Research

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89/R/B/4

## WINTER BARLEY

### VARIETIES AND BYDV

**Object:** To measure the relative rates of spread of three strains of barley yellow dwarf virus (BYDV) on two varieties of winter barley and to measure their effects on yield - Delafield.

**Sponsors:** N. Carter, R.T. Plumb.

**Design:** 5 randomised blocks of 6 plots split into 4 sub plots.

**Whole plot dimensions:** 3.0 x 15.0.

**Treatments:** All combinations of:-

Whole plots

1. **VARIETY** Varieties:

IGRI  
VIXEN

2. **INS DATE** Insecticide and date of application:

|         |                                                      |
|---------|------------------------------------------------------|
| CYPER E | Cypermethrin at 0.02 kg in 260 l on 28 October, 1988 |
| CYPER M | Cypermethrin at 0.02 kg in 260 l on 5 December       |
| PIRIM L | Pirimicarb at 0.14 kg in 200 l on 28 March, 1989     |

Sub plots

3. **V STRAIN** BYDV strain:

|      |                                     |
|------|-------------------------------------|
| NONE | Uninoculated                        |
| MAV  | Sitobion (Macrosiphum) avenae virus |
| PAV  | Padi and avenae virus               |
| RPV  | Rhopalosiphum padi virus            |

**NOTES:** (1) On 3 Oct, 1988, aphids were introduced to the centre of relevant plots to spread the three isolates of BYDV as above.

(2) The aphid species Sitobion avenae was used for MAV, and Rhopalosiphum padi for RPV and PAV.

**Basal applications:** Manures: Magnesian limestone at 5.0 t. 'Nitram' at 480 kg. Weedkillers: Diquat at 0.60 kg ion with a wetting agent ('Enhance' at 0.50 l) in 520 l. Isoproturon at 2.5 kg with mecoprop at 1.7 kg in 200 l. Metsulfuron-methyl at 6.0 g with fluroxypyr at 0.15 kg in 400 l. Glyphosate at 0.36 kg with a wetting agent, tallow amine ethoxylate at 0.80 kg, in 200 l. Fungicide: Propiconazole at 0.12 kg in 200 l.

**Seed:** Varieties, sown at 150 kg.

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**Cultivations, etc.:-** Straw chopped: 10 Aug, 1988. Rotary cultivated: 15 Aug. Magnesian limestone applied: 22 Aug. Diquat with wetting agent applied: 9 Sept. Cultivated with rotary grubber twice, rotary harrowed, seed sown: 10 Sept. Isoproturon and mecoprop applied: 3 Nov. N applied: 12 Apr, 1989. Metsulfuron-methyl with fluroxypyr applied: 15 Apr. Fungicide applied: 10 May. Glyphosate with tallow amine ethoxylate applied: 6 July. Combine harvested: 13 July. Previous crops: W. wheat 1987, w. oilseed rape 1988.

**NOTE:** Aphid survival was monitored for one to two weeks after release. Visual symptoms of BYDV were assessed throughout the season and a more detailed assessment was made in early February.

# GRAIN TONNES/HECTARE

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

| INS DATE<br>VARIETY  | CYPER E              | CYPER M | PIRIM L | Mean |      |
|----------------------|----------------------|---------|---------|------|------|
| IGRI                 | 7.83                 | 7.85    | 5.63    | 7.10 |      |
| VIXEN                | 8.36                 | 8.11    | 8.38    | 8.28 |      |
| Mean                 | 8.10                 | 7.98    | 7.00    | 7.69 |      |
| V STRAIN<br>VARIETY  | NONE                 | MAV     | PAV     | RPV  | Mean |
| IGRI                 | 7.28                 | 7.10    | 7.13    | 6.92 | 7.10 |
| VIXEN                | 8.24                 | 8.43    | 8.34    | 8.11 | 8.28 |
| Mean                 | 7.76                 | 7.76    | 7.73    | 7.51 | 7.69 |
| V STRAIN<br>INS DATE | NONE                 | MAV     | PAV     | RPV  | Mean |
| CYPER E              | 8.32                 | 8.07    | 8.18    | 7.81 | 8.10 |
| CYPER M              | 7.89                 | 8.13    | 7.95    | 7.94 | 7.98 |
| PIRIM L              | 7.07                 | 7.09    | 7.06    | 6.78 | 7.00 |
| Mean                 | 7.76                 | 7.76    | 7.73    | 7.51 | 7.69 |
| VARIETY              | V STRAIN<br>INS DATE | NONE    | MAV     | PAV  | RPV  |
| IGRI                 | CYPER E              | 8.02    | 7.66    | 7.98 | 7.68 |
|                      | CYPER M              | 7.77    | 7.82    | 8.00 | 7.83 |
|                      | PIRIM L              | 6.04    | 5.81    | 5.40 | 5.25 |
| VIXEN                | CYPER E              | 8.62    | 8.48    | 8.39 | 7.95 |
|                      | CYPER M              | 8.02    | 8.44    | 7.90 | 8.06 |
|                      | PIRIM L              | 8.10    | 8.38    | 8.72 | 8.31 |

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GRAIN TONNES/HECTARE

\*\*\* Standard errors of differences of means \*\*\*

| VARIETY                                               | INS DATE             | V STRAIN                        | VARIETY<br>INS DATE |
|-------------------------------------------------------|----------------------|---------------------------------|---------------------|
| 0.144                                                 | 0.177                | 0.140                           | 0.250               |
| VARIETY<br>V STRAIN                                   | INS DATE<br>V STRAIN | VARIETY<br>INS DATE<br>V STRAIN |                     |
| 0.224                                                 | 0.274                | 0.388                           |                     |
| Except when comparing means with the same level(s) of |                      |                                 |                     |
| VARIETY                                               | 0.198                |                                 |                     |
| INS DATE                                              |                      | 0.242                           |                     |
| VARIETY.INS DATE                                      |                      |                                 | 0.343               |

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

| Stratum     | d.f. | s.e.  | cv% |
|-------------|------|-------|-----|
| BLOCK.WP    | 20   | 0.395 | 5.1 |
| BLOCK.WP.SP | 72   | 0.542 | 7.0 |

GRAIN MEAN DM% 85.8

SUB PLOT AREA HARVESTED 0.00047