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## Yields of the Field Experiments 1989

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### 89/R/CS/140 Chemical Reference Plots - S. Barley

#### Rothamsted Research

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89/R/CS/140

### CHEMICAL REFERENCE PLOTS

**Object:** To study the persistence in soil of agricultural chemicals applied annually, singly and in combination and their effects on soil microflora and on yield of continuous s. barley - Long Hoos V 3.

**Sponsors:** R.H. Bromilow, A.A. Evans, P.H. Nicholls.

The 16th year, s. barley.

For previous years see 74-88/R/CS/140.

**Design:** Single replicate of 32 plots.

**Whole plot dimensions:** 4.06 x 4.57.

Treatments, applied cumulatively every year except as stated:

All combinations of:-

1. **WEEDKLLR** Weedkiller in autumn:  

|         |                                                                                                                                                        |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| NONE    | None                                                                                                                                                   |
| GLYPHOS | Glyphosate at 1.4 kg to barley stubble each autumn from 1979 to 1984, at 0.72 kg in 1985, at 0.54 kg in 1986, at 1.3 kg in 1987 and at 1.5 kg in 1988. |
2. **FUNGICIDE[1]** Fungicide in autumn:  

|         |                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------|
| NONE    | None                                                                                                 |
| TRIADIM | Triadimefon at 0.25 kg in autumn 1981, 1982, 1984, 1985, 1986, 1987 and 1988, 0.28 kg in autumn 1983 |
3. **FUNGICIDE[2]** Fungicide in spring:  

|         |                            |
|---------|----------------------------|
| NONE    | None                       |
| BENOMYL | Benomyl at 4 kg to seedbed |
4. **INSCTCDE** Insecticide:  

|          |                                        |
|----------|----------------------------------------|
| NONE     | None                                   |
| CHLORFEN | Chlorfenvinphos at 2 kg to the seedbed |
5. **NEMACIDE** Nematicide:  

|          |                                 |
|----------|---------------------------------|
| NONE     | None                            |
| ALDICARB | Aldicarb at 6 kg to the seedbed |

**NOTE:** Glyphosate and triadimefon were applied in 220 l on 10 Oct, 1988 and 24 Oct respectively. Other treatments were applied on 31 Mar, 1989.

**Basal applications:** Manure: 'Nitram' at 320 kg. Weedkillers: Bentazone at 0.80 kg, dichlorprop at 1.1 kg and MCPA at 0.64 kg in 220 l.

**Seed:** Klaxon, seed not dressed, sown at 160 kg.

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**Cultivations, etc.:-** Ploughed: 25 Nov, 1988. N applied: 7 Mar, 1989.  
Spring-time cultivated, seedbed treatments applied, rotary harrowed,  
seed sown, rolled: 31 Mar. Weedkillers applied: 9 May. Combine  
harvested: 15 Aug.

# GRAIN TONNES/HECTARE

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

|                    |      |          |      |
|--------------------|------|----------|------|
| <b>FUNGCIDE[1]</b> | NONE | TRIADIM  | Mean |
| <b>WEEDKLLR</b>    |      |          |      |
| NONE               | 3.81 | 3.93     | 3.87 |
| GLYPHOS            | 3.94 | 3.92     | 3.93 |
| Mean               | 3.88 | 3.93     | 3.90 |
| <b>FUNGCIDE[2]</b> | NONE | BENOMYL  | Mean |
| <b>WEEDKLLR</b>    |      |          |      |
| NONE               | 3.85 | 3.89     | 3.87 |
| GLYPHOS            | 3.90 | 3.97     | 3.93 |
| Mean               | 3.87 | 3.93     | 3.90 |
| <b>FUNGCIDE[2]</b> | NONE | BENOMYL  | Mean |
| <b>FUNGCIDE[1]</b> |      |          |      |
| NONE               | 3.83 | 3.93     | 3.88 |
| TRIADIM            | 3.92 | 3.93     | 3.93 |
| Mean               | 3.87 | 3.93     | 3.90 |
| <b>INSTCDE</b>     | NONE | CHLORFEN | Mean |
| <b>WEEDKLLR</b>    |      |          |      |
| NONE               | 3.74 | 3.99     | 3.87 |
| GLYPHOS            | 3.89 | 3.98     | 3.93 |
| Mean               | 3.81 | 3.99     | 3.90 |
| <b>INSTCDE</b>     | NONE | CHLORFEN | Mean |
| <b>FUNGCIDE[1]</b> |      |          |      |
| NONE               | 3.72 | 4.03     | 3.88 |
| TRIADIM            | 3.91 | 3.95     | 3.93 |
| Mean               | 3.81 | 3.99     | 3.90 |
| <b>INSTCDE</b>     | NONE | CHLORFEN | Mean |
| <b>FUNGCIDE[2]</b> |      |          |      |
| NONE               | 3.80 | 3.94     | 3.87 |
| BENOMYL            | 3.83 | 4.03     | 3.93 |
| Mean               | 3.81 | 3.99     | 3.90 |
| <b>NEMACIDE</b>    | NONE | ALDICARB | Mean |
| <b>WEEDKLLR</b>    |      |          |      |
| NONE               | 3.63 | 4.10     | 3.87 |
| GLYPHOS            | 3.73 | 4.14     | 3.93 |
| Mean               | 3.68 | 4.12     | 3.90 |

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## GRAIN TONNES/HECTARE

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

| NEMACIDE    | NONE        | ALDICARB | Mean     |
|-------------|-------------|----------|----------|
| FUNGCIDE[1] |             |          |          |
| NONE        | 3.61        | 4.14     | 3.88     |
| TRIADIM     | 3.75        | 4.10     | 3.93     |
| Mean        | 3.68        | 4.12     | 3.90     |
| NEMACIDE    | NONE        | ALDICARB | Mean     |
| FUNGCIDE[2] |             |          |          |
| NONE        | 3.67        | 4.08     | 3.87     |
| BENOMYL     | 3.69        | 4.17     | 3.93     |
| Mean        | 3.68        | 4.12     | 3.90     |
| NEMACIDE    | NONE        | ALDICARB | Mean     |
| INSCTCDE    |             |          |          |
| NONE        | 3.58        | 4.05     | 3.81     |
| CHLORFEN    | 3.78        | 4.20     | 3.99     |
| Mean        | 3.68        | 4.12     | 3.90     |
| WEEDKLLR    | FUNGCIDE[2] | NONE     | BENOMYL  |
|             | FUNGCIDE[1] |          |          |
| NONE        | NONE        | 3.83     | 3.79     |
|             | TRIADIM     | 3.87     | 3.98     |
| GLYPHOS     | NONE        | 3.82     | 4.06     |
|             | TRIADIM     | 3.97     | 3.88     |
| WEEDKLLR    | INSCTCDE    | NONE     | CHLORFEN |
|             | FUNGCIDE[1] |          |          |
| NONE        | NONE        | 3.63     | 3.99     |
|             | TRIADIM     | 3.85     | 4.00     |
| GLYPHOS     | NONE        | 3.81     | 4.07     |
|             | TRIADIM     | 3.96     | 3.89     |
| WEEDKLLR    | INSCTCDE    | NONE     | CHLORFEN |
|             | FUNGCIDE[2] |          |          |
| NONE        | NONE        | 3.74     | 3.96     |
|             | BENOMYL     | 3.75     | 4.02     |
| GLYPHOS     | NONE        | 3.87     | 3.92     |
|             | BENOMYL     | 3.90     | 4.04     |
| FUNGCIDE[1] | INSCTCDE    | NONE     | CHLORFEN |
|             | FUNGCIDE[2] |          |          |
| NONE        | NONE        | 3.71     | 3.94     |
|             | BENOMYL     | 3.73     | 4.12     |
| TRIADIM     | NONE        | 3.89     | 3.95     |
|             | BENOMYL     | 3.92     | 3.95     |

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GRAIN TONNES/HECTARE

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

|            |            | NEMACIDE | NONE | ALDICARB |
|------------|------------|----------|------|----------|
| WEEDKLLR   | FUNGIDE[1] |          |      |          |
| NONE       | NONE       |          | 3.67 | 3.95     |
|            | TRIADIM    |          | 3.60 | 4.25     |
| GLYPHOS    | NONE       |          | 3.56 | 4.33     |
|            | TRIADIM    |          | 3.89 | 3.96     |
|            |            | NEMACIDE | NONE | ALDICARB |
| WEEDKLLR   | FUNGIDE[2] |          |      |          |
| NONE       | NONE       |          | 3.61 | 4.09     |
|            | BENOMYL    |          | 3.66 | 4.11     |
| GLYPHOS    | NONE       |          | 3.73 | 4.06     |
|            | BENOMYL    |          | 3.72 | 4.22     |
|            |            | NEMACIDE | NONE | ALDICARB |
| FUNGIDE[1] | FUNGIDE[2] |          |      |          |
| NONE       | NONE       |          | 3.61 | 4.04     |
|            | BENOMYL    |          | 3.61 | 4.24     |
| TRIADIM    | NONE       |          | 3.73 | 4.11     |
|            | BENOMYL    |          | 3.76 | 4.10     |
|            |            | NEMACIDE | NONE | ALDICARB |
| WEEDKLLR   | INSCDCDE   |          |      |          |
| NONE       | NONE       |          | 3.51 | 3.98     |
|            | CHLORFEN   |          | 3.76 | 4.22     |
| GLYPHOS    | NONE       |          | 3.66 | 4.11     |
|            | CHLORFEN   |          | 3.79 | 4.17     |
|            |            | NEMACIDE | NONE | ALDICARB |
| FUNGIDE[1] | INSCDCDE   |          |      |          |
| NONE       | NONE       |          | 3.55 | 3.89     |
|            | CHLORFEN   |          | 3.67 | 4.39     |
| TRIADIM    | NONE       |          | 3.61 | 4.20     |
|            | CHLORFEN   |          | 3.88 | 4.01     |
|            |            | NEMACIDE | NONE | ALDICARB |
| FUNGIDE[2] | INSCDCDE   |          |      |          |
| NONE       | NONE       |          | 3.47 | 4.14     |
|            | CHLORFEN   |          | 3.87 | 4.01     |
| BENOMYL    | NONE       |          | 3.69 | 3.96     |
|            | CHLORFEN   |          | 3.68 | 4.38     |

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

|                              |       |
|------------------------------|-------|
| Margins of two factor tables | 0.144 |
| Two factor tables            | 0.204 |
| Three factor tables          | 0.289 |

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

| Stratum | d.f. | s.e.  | cv%  |
|---------|------|-------|------|
| WP      | 6    | 0.409 | 10.5 |

GRAIN MEAN DM% 84.6 PLOT AREA HARVESTED 0.00093