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# Yields of the Field Experiments 1982

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## 82/R/RN/8 Cultivation/WEEDKILLER - W. Barley

### Rothamsted Research

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82/R/RN/8

CULTIVATION/WEEDKILLER

Object: To study the long-term effects of weedkillers and different methods of primary cultivation on a sequence of crops - Great Harpenden I.

Sponsors: R. Moffitt, J.A. Currie.

The 22nd year, w. barley.

For previous years see 'Details' 1967 and 1973 and 74-81/R/RN/8.

Design: 2 randomised blocks of 12 plots split into 2.

Whole plot dimensions: 12.8 x 12.2.

Treatments: All combinations of:-

Whole plots

- |                 |   |
|-----------------|---|
| 1. CULTIVTN     | Primary cultivations annually:  |
| PLOUGH          | Ploughed: 1 Oct, 1981   |
| ROTA DIG        | Cultivated by rotary digger: 7 Oct  |
| DEEPTINE        | Deep-tine cultivated: 28 Sept   |
| 2. WEEDCNTL(76) | Weed control to beans and potatoes in the rotation<br>beans, wheat, potatoes, barley practised until 1976.<br>Last applied to beans 1976: |
| MECHANCL        | Mechanical  |
| RESIDUAL        | Residual weedkiller (duplicated)  |

Sub plots

- |                 |  |
|-----------------|--|
| 3. WEEDKLLR(75) | Hormone weedkiller to cereals in the previous rotation,<br>last applied to barley 1975 (basal hormone weedkiller<br>to s. wheat 1977, s. barley 1978 to 1980 and w. barley<br>1981 to 1982): |
| NONE            |  |
| HORMONE         |  |
| 4. WEEDKLLR(81) | Paraquat weedkiller to preceding cereal stubbles last<br>applied for w. barley 1981:   |
| NONE            |  |
| PARAQUAT        |  |

NOTE: The combinations of 3 and 4 are tested on half plots: WEEDKLLR(75) NONE, WEEDKLLR(81) NONE and WEEDKLLR(75) HORMONE, WEEDKLLR(81) PARAQUAT on one block, remaining combinations on the other.

EXTRA plus three extra whole plot treatments; all given simazine to beans in 1976, paraquat to preceding cereal stubble, direct drilled 1981 and 1982, but differing in cultivations for 1979 barley:

82/R/RN/8

DD(SP T) Heavy spring-tine cultivated twice for 1979 barley,  
with sub plot test 3 above.  
DD(SH P) Shallow ploughed for 1979 barley, with sub plot test 3  
above.  
DD(PL) Ploughed for 1979 barley, with sub plot test 3 above.

NOTE: Paraquat was applied to direct drilled plots at 0.56 kg ion in 220 l.

Basal applications: Manures: (10:23:23) at 250 kg, combine drilled.  
'Nitro-Chalk' at 630 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l.  
Chlortoluron at 5.6 l in 250 l. Dicamba, mecoprop and MCPA (as 'Poly-  
Farmon' at 5.0 l) applied with the prochloraz in 250 l. Fungicides:  
Prochloraz at 0.4 kg. Propiconazole at 0.25 kg in 250 l.

Seed: Igri, dressed ethirimol, sown at 160 kg.

Cultivations, etc.:- Glyphosate applied: 16 Sept, 1981. Paraquat applied  
to EXTRA plots and these plots direct drilled, remaining plots rotary  
harrowed, seed sown: 23 Oct. Chlortoluron applied: 24 Oct. Dicamba,  
mecoprop and MCPA applied with prochloraz: 14 Apr, 1982. N applied:  
22 Apr. Propiconazole applied: 3 June. Combine harvested: 26 July.

EXTRA PLOTS ONLY

GRAIN TONNES/HECTARE

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

| EXTRA        | DD(SP T) | DD(SH P) | DD(PL) | MEAN |
|--------------|----------|----------|--------|------|
| WEEDKLLR(75) |          |          |        |      |
| NONE         | 6.44     | 6.73     | 6.68   | 6.62 |
| HORMONE      | 6.96     | 6.09     | 7.03   | 6.69 |
| MEAN         | 6.70     | 6.41     | 6.85   | 6.66 |

GRAIN MEAN DM% 81.6

SUB PLOT AREA HARVESTED 0.00347

82/R/RN/8

OMITTING EXTRA PLOTS

GRAIN TONNES/HECTARE

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

| CULTIVTN<br>WEEDCNTL (76) | PLOUGH | ROTA DIG | DEEPTINE | MEAN |
|---------------------------|--------|----------|----------|------|
| MECHANCL                  | 6.01   | 6.89     | 7.00     | 6.63 |
| RESIDUAL                  | 6.39   | 6.54     | 6.71     | 6.55 |
| MEAN                      | 6.26   | 6.65     | 6.81     | 6.58 |

| CULTIVTN<br>WEEDKLLR(75) | PLOUGH | ROTA DIG | DEEPTINE | MEAN |
|--------------------------|--------|----------|----------|------|
| NONE                     | 6.35   | 6.63     | 6.81     | 6.60 |
| HORMONE                  | 6.18   | 6.67     | 6.81     | 6.55 |
| MEAN                     | 6.26   | 6.65     | 6.81     | 6.58 |

| CULTIVTN<br>WEEDKLLR(81) | PLOUGH | ROTA DIG | DEEPTINE | MEAN |
|--------------------------|--------|----------|----------|------|
| NONE                     | 6.23   | 6.69     | 6.85     | 6.59 |
| PARAQUAT                 | 6.29   | 6.62     | 6.77     | 6.56 |
| MEAN                     | 6.26   | 6.65     | 6.81     | 6.58 |

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

| TABLE | CULTIVTN<br>WEEDCNTL(76) | WEEDKLLR(75) | WEEDKLLR(81) |
|-------|--------------------------|--------------|--------------|
| SED   | 0.130                    | 0.113        | 0.080        |

| TABLE | CULTIVTN<br>WEEDCNTL(76) | CULTIVTN<br>WEEDKLLR(75) | CULTIVTN<br>WEEDKLLR(81) | MIN REP | MAX-MIN | MAX REP |
|-------|--------------------------|--------------------------|--------------------------|---------|---------|---------|
| SED   | 0.225                    |                          |                          |         |         |         |
|       | 0.195                    | 0.163                    | 0.163                    |         |         |         |
|       | 0.159                    |                          |                          |         |         |         |

EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:  
CULTIVTN 0.139 0.139

WEEDCNTL(76)  
MIN REP MECHANCL  
MAX-MIN MECHANCL V RESIDUAL  
MAX REP RESIDUAL

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

| STRATUM     | DF | SE    | CV% |
|-------------|----|-------|-----|
| BLOCK.WP    | 11 | 0.225 | 3.4 |
| BLOCK.WP.SP | 10 | 0.241 | 3.7 |

GRAIN MEAN DM% 83.6

SUB PLOT AREA HARVESTED 0.00347