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84/R/B/13 Timing of Electrostatic Sprays - S. Barley

Rothamsted Research

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84/R/B/13

SPRING BARLEY

TIMING OF ELECTROSTATIC SPRAYS

Object: To study the effect of different times and rates of fungicides applied by hydraulic or electrostatic sprayers on mildew incidence and yield of spring barley - Webbs.

Sponsors: D.C. Griffiths, G.R. Cayley, P. Etheridge, R.E. Goodchild, B.J. Pye, G.C. Scott.

Design: 3 randomised blocks of 20 plots.

Whole plot dimensions: 3.0 x 15.0.

Treatments: All combinations of:-

- | | |
|-------------|--|
| 1. SPRAYER | Spraying machines: |
| ELECTRO | Electrostatic sprayer applying fungicide in 6 l water |
| CNVNTL | Conventional hydraulic sprayer applying fungicide in 200 l water |
| 2. FUNGRATE | Rates of fungicides: |
| 1 | Propiconazole at 0.03 kg, tridemorph at 0.06 kg |
| 2 | Twice rate 1 |
| 4 | Four times rate 1 |
| 3. SPR TIME | Spray timing: |
| E | Early, 24 May, 1984 |
| L | Late, 8 June |
| E+L | Early + Late, 24 May and 8 June |

plus one extra treatment:

EXTRA

NONE None (duplicated)

- NOTES: (1) The electrostatic sprayer had 4 spinning-disc nozzles mounted on a hand-held boom.
(2) The conventional machine was a hand-held knapsack sprayer.
(3) Sides and ends of plots, 3 m and 5 m respectively, were separated by Atem s. barley, seed dressed with triadimenol plus fuberidazole.

Basal applications: Manures: FYM at 25 t. 'Nitro-Chalk' at 500 kg.
Weedkillers: 3, 6-dichloropicolinic acid at 0.05 kg and bromoxynil at 0.24 kg with mecoprop (as 'CMPP' at 3.0 l) in 250 l.

Seed: Georgie, sown at 160 kg.

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Cultivations, etc.:- Heavy spring-tine cultivated: 1 Oct, 1983. FYM applied: 11 Nov. Ploughed: 28 Nov. N applied, spring-tine cultivated: 8 Mar, 1984. Rotary harrowed, seed sown: 9 Mar. Weedkillers applied: 15 May. Combine harvested: 19 Aug. Previous crops: S. barley 1982 and 1983.

NOTE: Mildew assessments were made twice during June.

GRAIN TONNES/HECTARE

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

| FUNGRATE | 1 | 2 | 4 | MEAN |
|------------|----------|------|------|------|
| SPRAYER | | | | |
| ELECTRO | 6.24 | 6.54 | 6.62 | 6.47 |
| CNVNTL | 6.54 | 6.98 | 6.79 | 6.77 |
| MEAN | 6.39 | 6.76 | 6.71 | 6.62 |
| SPR TIME | E | L | E+L | MEAN |
| SPRAYER | | | | |
| ELECTRO | 6.44 | 6.14 | 6.83 | 6.47 |
| CNVNTL | 6.40 | 6.58 | 7.33 | 6.77 |
| MEAN | 6.42 | 6.36 | 7.08 | 6.62 |
| SPR TIME | E | L | E+L | MEAN |
| FUNGRATE | | | | |
| 1 | 6.22 | 6.04 | 6.90 | 6.39 |
| 2 | 6.51 | 6.62 | 7.15 | 6.76 |
| 4 | 6.53 | 6.41 | 7.18 | 6.71 |
| MEAN | 6.42 | 6.36 | 7.08 | 6.62 |
| SPRAYER | SPR TIME | E | L | E+L |
| ELECTRO | FUNGRATE | | | |
| | 1 | 6.40 | 5.81 | 6.51 |
| | 2 | 6.30 | 6.24 | 7.09 |
| | 4 | 6.63 | 6.36 | 6.89 |
| CNVNTL | 1 | 6.05 | 6.26 | 7.30 |
| | 2 | 6.71 | 7.01 | 7.21 |
| | 4 | 6.43 | 6.46 | 7.47 |
| NONE | 6.00 | | | |
| GRAND MEAN | 6.56 | | | |

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GRAIN TONNES/HECTARE

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

| TABLE | SPRAYER | FUNGRATE | SPR TIME | SPRAYER FUNGRATE |
|-------|---------|----------|----------|---------------------|
| SED | 0.163 | 0.200 | 0.200 | 0.283 |

| TABLE | SPRAYER SPR TIME | FUNGRATE SPR TIME | SPRAYER FUNGRATE SPR TIME |
|-------|---------------------|----------------------|---------------------------------|
| SED | 0.283 | 0.346 | 0.490 |

SED FOR COMPARING EXTRA NONE WITH ANY ITEM IN
SPRAYER.FUNGRATE.SPR TIME TABLE IS 0.424

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

| STRATUM | DF | SE | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 39 | 0.600 | 9.1 |

GRAIN MEAN DM% 88.9

PLOT AREA HARVESTED 0.00306