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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.

84/R/B/13

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			

84/R/B/13

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