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89/R/CS/302 Eyespot Resistance to Mbc - W. Wheat

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89/R/CS/302

EYESPOT RESISTANCE TO MBC

Object: To study the development of resistance to MBC fungicides in eyespot and the ability of resistant strains to survive, spread and infect - Meadow.

Sponsor: G.L. Bateman.

The fifth year, w. wheat.

For previous years see 85-88/R/CS/302.

Design: 2 randomised blocks of 4 plots split into 6.

Whole plot dimensions: 12.0 x 24.0.

Treatments: All combinations of:-

Whole plots

1. **FUNGICIDE** Fungicides applied cumulatively to 1985, 1986, 1987 and 1988 treatments:

| | |
|----------|--|
| NONE | None |
| CARB | Carbendazim at 0.25 kg |
| PRO | Prochloraz at 0.40 kg |
| CARB+PRO | Carbendazim at 0.15 kg + prochloraz at 0.40 kg |

Sub plots

2. **EYE INOC** Eyespot inoculum, applied in first year only:

| | |
|----------|---|
| NATURAL | Natural background population (duplicated) |
| W 19R 1S | Inoculated with wheat strains in proportion 19 resistant to one sensitive |
| W 1R 19S | As above but one resistant to 19 sensitive |
| R 19R 1S | Inoculated with rye strains, 19 resistant to one sensitive |
| R 1R 19S | As above but one resistant to 19 sensitive |

NOTES: (1) Fungicide treatments were applied in 200 l on 15 Nov, 1988 and 29 Mar, 1989.

(2) The eyespot inoculum was colonised on oat seed and this was broadcast in October, 1984.

Basal applications: Manures: (0:18:36) at 920 kg. 'Nitram' at 580 kg. Weedkillers: Glyphosate at 0.27 kg in 200 l. Chlortoluron at 3.5 kg in 200 l. Metsulfuron-methyl at 6.0 g in 400 l.

Seed: Avalon, sown at 190 kg.

Cultivations, etc.:- Rotary cultivated: 6 Sept, 1988. PK applied: 22 Sept. Glyphosate applied: 1 Oct. Heavy spring-tine cultivated: 14 Oct. Cultivated with rotary grubber, seed sown: 17 Oct. Chlortoluron applied: 21 Oct. N applied: 15 Apr, 1989. Metsulfuron-methyl applied: 3 May. Combine harvested: 3 Aug.

NOTE: Eyespot and sharp eyespot were assessed in July.

89/R/CS/302

GRAIN TONNES/HECTARE

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

| EYE INOC FUNGICIDE | NATURAL | W 19R 1S | W 1R 19S | R 19R 1S | R 1R 19S | Mean |
|-----------------------|---------|----------|----------|----------|----------|------|
| NONE | 7.29 | 6.95 | 7.01 | 6.85 | 7.50 | 7.15 |
| CARB | 7.09 | 7.05 | 7.37 | 6.91 | 7.10 | 7.10 |
| PRO | 6.85 | 6.78 | 7.01 | 7.27 | 7.27 | 7.01 |
| CARB+PRO | 7.55 | 6.73 | 7.51 | 7.38 | 7.92 | 7.44 |
| Mean | 7.19 | 6.88 | 7.22 | 7.10 | 7.45 | 7.17 |

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

| EYE INOC | FUNGICIDE* |
|----------|---------------|
| | EYE INOC |
| 0.226 | 0.451 min.rep |
| 0.195 | 0.391 max-min |

EYE INOC
max-min NATURAL v any of the remainder
min.rep any of the remainder

* Within the same level of FUNGICIDE only

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

| Stratum | d.f. | s.e. | cv% |
|-------------------------|---------|-------|-----|
| BLOCK.WP.SP | 24 | 0.451 | 6.3 |
| GRAIN MEAN DM% | 85.9 | | |
| SUB PLOT AREA HARVESTED | 0.00138 | | |