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87/R/M/2 Factors Affecting Eyespot - W. Wheat, Barley - Mixed Crops

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87/R/M/2

MIXED 2

FACTORS AFFECTING EYESPOT

Object: To study eyespot (*Pseudocercospora herpotrichoides*) development after inoculation with different pathotypes in relation to host crop and seed rate - White Horse II.

Sponsor: A. Goulds.

Design: 2 blocks of 12 plots split into 3.

Whole plot dimensions: 3.0 x 37.0.

Treatments: All combinations of:-

Whole plots

- | | |
|-------------|--|
| 1. W CEREAL | Winter cereals sown on 30 September, 1986: |
| BARLEY | Winter barley cv. Opera |
| WHEAT | Winter wheat cv. Avalon |
| 2. SEEDRATE | Seed rates (seeds per square metre): |
| NORMAL | Normal - 300 barley, 400 wheat |
| HALF N | Half normal - 150 barley, 200 wheat |
| 3. INOCULUM | Inoculation with different eyespot pathogen types: |
| NONE | None |
| RYE INOC | Rye type |
| WHE INOC | Wheat type |

Sub plots

- | | |
|-------------|--|
| 4. FUNGTIME | Times of applying prochloraz at 0.40 kg and carbendazim at 0.15 kg in 220 l: |
| NONE | None |
| EARLY | Sprayed at growth stage 30/31 on 23 Apr, 1987 |
| LATE | Sprayed at growth stage, 33/37 wheat, 41/49 barley on 19 May |

NOTES: (1) One additional sub-plot in each whole plot was systematically arranged for sampling, yields not taken.
(2) Strains of wheat and rye type inoculum were colonised on oat seed and broadcast within two weeks of emergence.

Basal applications: Manures: 'Nitram' at 350 kg. Weedkillers: Isoproturon at 2.5 kg with clopyralid at 0.07 kg and bromoxynil at 0.34 kg and mecoprop at 2.5 kg in 200 l. Fungicides: Propiconazole at 0.25 kg with tridemorph at 0.19 kg in 200 l.

Cultivations, etc.:- Heavy spring-tine cultivated twice, disced: 29 Sept, 1986. Rotary harrowed, seed sown: 30 Sept. Weedkillers applied: 15 Apr, 1987. N applied: 17 Apr. Basal fungicides applied: 29 June. Combine harvested: 7 Aug (barley), 1 Sept (wheat). Previous crops: W oats 1985, potatoes 1986.

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NOTE: Eyespot was assessed on plants at fortnightly intervals from December to G.S. 30 and weekly thereafter.

GRAIN TONNES/HECTARE

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

| | | | | |
|----------|----------|----------|----------|----------|
| SEEDRATE | NORMAL | HALF N | Mean | |
| W CEREAL | | | | |
| BARLEY | 7.74 | 7.67 | 7.71 | |
| WHEAT | 7.98 | 7.85 | 7.92 | |
| Mean | 7.86 | 7.76 | 7.81 | |
| INOCULUM | NONE | RYE INOC | WHE INOC | Mean |
| W CEREAL | | | | |
| BARLEY | 7.97 | 7.74 | 7.41 | 7.71 |
| WHEAT | 7.94 | 8.03 | 7.77 | 7.92 |
| Mean | 7.95 | 7.89 | 7.59 | 7.81 |
| INOCULUM | NONE | RYE INOC | WHE INOC | Mean |
| SEEDRATE | | | | |
| NORMAL | 8.09 | 7.91 | 7.57 | 7.86 |
| HALF N | 7.81 | 7.87 | 7.61 | 7.76 |
| Mean | 7.95 | 7.89 | 7.59 | 7.81 |
| FUNGTIME | NONE | EARLY | LATE | Mean |
| W CEREAL | | | | |
| BARLEY | 7.18 | 8.06 | 7.88 | 7.71 |
| WHEAT | 7.56 | 7.95 | 8.23 | 7.92 |
| Mean | 7.37 | 8.00 | 8.05 | 7.81 |
| FUNGTIME | NONE | EARLY | LATE | Mean |
| SEEDRATE | | | | |
| NORMAL | 7.32 | 8.08 | 8.18 | 7.86 |
| HALF N | 7.43 | 7.93 | 7.92 | 7.76 |
| Mean | 7.37 | 8.00 | 8.05 | 7.81 |
| FUNGTIME | NONE | EARLY | LATE | Mean |
| INOCULUM | | | | |
| NONE | 7.47 | 8.22 | 8.17 | 7.95 |
| RYE INOC | 7.72 | 7.78 | 8.16 | 7.89 |
| WHE INOC | 6.92 | 8.02 | 7.82 | 7.59 |
| Mean | 7.37 | 8.00 | 8.05 | 7.81 |
| W CEREAL | INOCULUM | NONE | RYE INOC | WHE INOC |
| BARLEY | SEEDRATE | | | |
| NORMAL | | 8.15 | 7.83 | 7.24 |
| HALF N | | 7.78 | 7.65 | 7.58 |
| WHEAT | NORMAL | 8.04 | 7.98 | 7.91 |
| | HALF N | 7.85 | 8.08 | 7.63 |

87/R/M/2

GRAIN TONNES/HECTARE

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

| | FUNGTIME | NONE | EARLY | LATE |
|----------|----------|------|-------|------|
| W CEREAL | SEEDRATE | | | |
| BARLEY | NORMAL | 7.03 | 8.17 | 8.02 |
| | HALF N | 7.33 | 7.95 | 7.73 |
| WHEAT | NORMAL | 7.60 | 7.98 | 8.35 |
| | HALF N | 7.53 | 7.92 | 8.12 |
| W CEREAL | FUNGTIME | NONE | EARLY | LATE |
| BARLEY | INOCULUM | | | |
| | NONE | 7.54 | 8.18 | 8.17 |
| | RYE INOC | 7.45 | 7.99 | 7.79 |
| WHEAT | WHE INOC | 6.55 | 8.02 | 7.66 |
| | NONE | 7.40 | 8.25 | 8.18 |
| | RYE INOC | 8.00 | 7.57 | 8.53 |
| | WHE INOC | 7.29 | 8.03 | 7.99 |
| SEEDRATE | FUNGTIME | NONE | EARLY | LATE |
| NORMAL | INOCULUM | | | |
| | NONE | 7.56 | 8.36 | 8.36 |
| | RYE INOC | 7.77 | 7.74 | 8.22 |
| HALF N | WHE INOC | 6.62 | 8.13 | 7.97 |
| | NONE | 7.39 | 8.07 | 7.99 |
| | RYE INOC | 7.68 | 7.82 | 8.10 |
| | WHE INOC | 7.23 | 7.91 | 7.68 |
| W CEREAL | FUNGTIME | NONE | EARLY | LATE |
| BARLEY | INOCULUM | | | |
| | NONE | 7.74 | 8.39 | 8.33 |
| | RYE INOC | 7.52 | 8.03 | 7.96 |
| | WHE INOC | 5.84 | 8.11 | 7.78 |
| | HALF N | NONE | 7.34 | 7.97 |
| | RYE INOC | 7.39 | 7.95 | 7.63 |
| | WHE INOC | 7.27 | 7.93 | 7.54 |
| WHEAT | NORMAL | NONE | 7.38 | 8.34 |
| | RYE INOC | 8.02 | 7.45 | 8.49 |
| | WHE INOC | 7.40 | 8.16 | 8.17 |
| | HALF N | NONE | 7.43 | 8.17 |
| | RYE INOC | 7.98 | 7.69 | 8.58 |
| | WHE INOC | 7.19 | 7.89 | 7.81 |

87/R/M/2

GRAIN TONNES/HECTARE

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

| | | | | |
|--------|----------------------------------|----------------------------------|--|----------------------------------|
| Table | W CEREAL | SEEDRATE | INOCULUM | FUNGTIME |
| s.e.d. | 0.093 | 0.093 | 0.114 | 0.114 |
| Table | W CEREAL SEEDRATE | W CEREAL INOCULUM | SEEDRATE INOCULUM | W CEREAL FUNGTIME |
| s.e.d. | 0.132 | 0.162 | 0.162 | 0.162 |
| Table | SEEDRATE FUNGTIME | INOCULUM FUNGTIME | W CEREAL SEEDRATE INOCULUM | W CEREAL SEEDRATE FUNGTIME |
| s.e.d. | 0.162 | 0.198 | 0.229 | 0.228 |
| Table | W CEREAL INOCULUM FUNGTIME | SEEDRATE INOCULUM FUNGTIME | W CEREAL SEEDRATE INOCULUM FUNGTIME | |
| s.e.d. | 0.280 | 0.280 | 0.396 | |

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

| Stratum | d.f. | s.e. | cv% |
|-------------|------|-------|-----|
| BLOCK.WP | 11 | 0.229 | 2.9 |
| BLOCK.WP.SP | 24 | 0.396 | 5.1 |

GRAIN MEAN DM% 84.3

SUB PLOT AREA HARVESTED 0.00235