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88/R/M/6 Factors Affecting Eyespot - W. Wheat, Barley - Mixed Crops

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88/R/M/6

MIXED 6

FACTORS AFFECTING EYESPOT

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

Sponsors: A. Goulds, B.D.L. Fitt.

Design: 2 randomised blocks of 12 plots split into 4.

Whole plot dimensions: 3.0 x 37.0.

Treatments: All combinations of:-

Whole plots

1. **W CEREAL** Winter cereals sown on 30 October, 1987:
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 26 Apr, 1988
LATE Sprayed at growth stage, 33/37 wheat, 41/49 barley on 20 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: Chalk at 5.0 t. 'Nitram' at 120 kg and later at 250 kg. Weedkillers: Paraquat at 0.60 kg ion in 200 l. Fluroxypyr at 0.20 kg with clopyralid at 0.07 kg and bromoxynil at 0.34 kg with the tridemorph in 200 l. Fungicides: Tridemorph at 0.52 kg. Chlorothalonil at 1.0 kg in 200 l.

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Cultivations, etc.:- Ploughed: 12 Aug, 1987. Discd: 17 Aug. Chalk applied: 16 Sept. Paraquat applied: 28 Oct. Rotary harrowed, seed sown: 30 Oct. First N applied: 2 Mar, 1988. Second N applied 22 Apr. Remaining weedkillers with tridemorph applied: 10 May. Chlorothalonil applied: 6 June. Combine harvested: 4 Aug (barley), 22 Aug (wheat). Previous crops: W. barley 1986, w. oilseed rape 1987.

NOTE: Eyespot was assessed on plants at weekly intervals from early March until early August.

GRAIN TONNES/HECTARE

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

SEEDRATE	NORMAL	HALF N	Mean	
W CEREAL				
BARLEY	6.93	6.58	6.76	
WHEAT	8.96	8.26	8.61	
Mean	7.94	7.42	7.68	
INOCULUM	NONE	RYE INOC	WHE INOC	Mean
W CEREAL				
BARLEY	6.74	6.81	6.71	6.76
WHEAT	8.62	8.55	8.66	8.61
Mean	7.68	7.68	7.69	7.68
INOCULUM	NONE	RYE INOC	WHE INOC	Mean
SEEDRATE				
NORMAL	7.97	8.04	7.82	7.94
HALF N	7.39	7.32	7.55	7.42
Mean	7.68	7.68	7.69	7.68
FUNGTIME	NONE	EARLY	LATE	Mean
W CEREAL				
BARLEY	6.62	6.82	6.82	6.76
WHEAT	8.42	8.64	8.76	8.61
Mean	7.52	7.73	7.79	7.68
FUNGTIME	NONE	EARLY	LATE	Mean
SEEDRATE				
NORMAL	7.78	8.02	8.04	7.94
HALF N	7.27	7.45	7.55	7.42
Mean	7.52	7.73	7.79	7.68
FUNGTIME	NONE	EARLY	LATE	Mean
INOCULUM				
NONE	7.61	7.73	7.70	7.68
RYE INOC	7.43	7.80	7.82	7.68
WHE INOC	7.53	7.66	7.87	7.69
Mean	7.52	7.73	7.79	7.68

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GRAIN TONNES/HECTARE

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

		INOCULUM	NONE	RYE INOC	WHE INOC
W CEREAL	SEEDRATE				
BARLEY	NORMAL		6.97	7.03	6.78
	HALF N		6.52	6.59	6.65
WHEAT	NORMAL		8.97	9.05	8.86
	HALF N		8.26	8.05	8.46
		FUNGTIME	NONE	EARLY	LATE
W CEREAL	SEEDRATE				
BARLEY	NORMAL		6.78	7.06	6.93
	HALF N		6.46	6.57	6.72
WHEAT	NORMAL		8.77	8.97	9.15
	HALF N		8.08	8.32	8.38
		FUNGTIME	NONE	EARLY	LATE
W CEREAL	INOCULUM				
BARLEY	NONE		6.64	6.72	6.88
	RYE INOC		6.57	6.98	6.89
	WHE INOC		6.67	6.76	6.71
WHEAT	NONE		8.58	8.75	8.52
	RYE INOC		8.29	8.62	8.75
	WHE INOC		8.39	8.56	9.02
		FUNGTIME	NONE	EARLY	LATE
SEEDRATE	INOCULUM				
NORMAL	NONE		7.75	8.09	8.07
	RYE INOC		7.91	8.06	8.16
	WHE INOC		7.67	7.89	7.89
HALF N	NONE		7.47	7.37	7.32
	RYE INOC		6.95	7.54	7.48
	WHE INOC		7.39	7.43	7.84
		FUNGTIME	NONE	EARLY	LATE
W CEREAL	SEEDRATE	INOCULUM			
BARLEY	NORMAL	NONE	6.76	7.11	7.04
		RYE INOC	6.93	7.21	6.97
		WHE INOC	6.67	6.88	6.79
	HALF N	NONE	6.51	6.32	6.71
		RYE INOC	6.21	6.75	6.81
		WHE INOC	6.67	6.65	6.63
WHEAT	NORMAL	NONE	8.74	9.08	9.11
		RYE INOC	8.90	8.91	9.34
		WHE INOC	8.68	8.91	9.00
	HALF N	NONE	8.43	8.42	7.94
		RYE INOC	7.68	8.33	8.15
		WHE INOC	8.11	8.21	9.05

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GRAIN TONNES/HECTARE

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

W CEREAL	SEEDRATE	INOCULUM	FUNGTIME
0.090	0.090	0.110	0.086

W CEREAL	W CEREAL	SEEDRATE	W CEREAL
SEEDRATE	INOCULUM	INOCULUM	FUNGTIME
0.127	0.156	0.156	0.134

Except when comparing means with the same level(s) of
W CEREAL 0.122

SEEDRATE	INOCULUM	W CEREAL	W CEREAL
FUNGTIME	FUNGTIME	SEEDRATE	SEEDRATE
		INOCULUM	FUNGTIME
0.134	0.164	0.220	0.190

Except when comparing means with the same level(s) of
SEEDRATE 0.122
INOCULUM 0.150
W CEREAL. SEEDRATE 0.173

W CEREAL	SEEDRATE	W CEREAL
INOCULUM	INOCULUM	SEEDRATE
FUNGTIME	FUNGTIME	INOCULUM
		FUNGTIME
0.233	0.233	0.329

Except when comparing means with the same level(s) of
W CEREAL. INOCULUM 0.212
SEEDRATE. INOCULUM 0.212
W CEREAL. SEEDRATE. INOCULUM 0.299

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	11	0.220	2.9
BLOCK.WP.SP	24	0.299	3.9

GRAIN MEAN DM% 80.5

SUB PLOT AREA HARVESTED 0.00235