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Yields of the Field Experiments 1988

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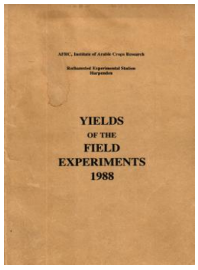

88/R/M/6 Factors Affecting Eyespot - W. Wheat, Barley - Mixed Crops

Rothamsted Research

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88/R/M/6

MIXED 6

FACTORS AFFECTING EYESPOT

Object: To study eyespot (Pseudocercosporella 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. Disced: 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 *****

W CEREAL	INOCULUM SEEDRATE	NONE	RYE INOC	WHE INOC
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

W CEREAL	FUNGTIME SEEDRATE	NONE	EARLY	LATE
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

W CEREAL	FUNGTIME INOCULUM	NONE	EARLY	LATE
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

SEEDRATE	FUNGTIME INOCULUM	NONE	EARLY	LATE
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

W CEREAL	SEEDRATE	FUNGTIME INOCULUM	NONE	EARLY	LATE
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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88/R/M/6

GRAIN TONNES/HECTARE

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

W CEREAL	SEEDRATE	INOCULUM	FUNGTIME
0.090	0.090	0.110	0.086

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

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

W CEREAL	0.122

SEEDRATE FUNGTIME	INOCULUM FUNGTIME	W CEREAL SEEDRATE INOCULUM	W CEREAL SEEDRATE 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 INOCULUM FUNGTIME	SEEDRATE INOCULUM FUNGTIME	W CEREAL SEEDRATE 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

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