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84/W/B/1 Mildew Study - W. Barley, S. Barley

Rothamsted Research

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84/W/B/1

WINTER AND SPRING BARLEY

MILDEW STUDY

Object: To study the effects of fungicides applied to w. and s. barley on the incidence of mildew and on yield and whether these effects are influenced by neighbouring treatments - Woburn, Far Field II.

Sponsor: D.W. Hollomon.

Design: W. barley: 2 blocks of 12 plots split into 2
S. barley: 2 blocks of 12 plots

Whole plot dimensions: 8.0 x 8.0.

Treatments to W. BARLEY seed treated triadimenol + fuberidazole and crop sprayed with fenpropimorph at 0.79 kg in 280 l on 3 May, 1984:

All combinations of:-

Whole plots

1. SD SB Seed dressings to one adjacent plot of s. barley, other adjacent plot given no mildewicidal seed dressing, sprayed tridemorph at 0.52 kg in 250 l on 3 May:

NONE	None
TRI+FUB	Triadimenol + fuberidazole

2. VAR SB Variety of adjacent s. barley testing seed dressing, other adjacent s. barley plot sown to Golden Promise given no mildewicidal seed dressing, sprayed tridemorph at 0.52 kg in 250 l on 3 May:

G PROMIS	Golden Promise
KEG	Keg

3. FS SB Foliar sprays to s. barley testing seed dressing, other adjacent s. barley plot given tridemorph at 0.52 kg in 250 l on 3 May:

NONE	None
FENPROP	Fenpropimorph at 0.75 kg in 250 l on 15 June
ETHIRIM	Ethirimol at 0.28 kg in 250 l on 15 June

Sub plots

4. POSITION Position of w. barley plots in relation to s. barley plots testing seed dressing:

N EAST	North east
S WEST	South west

Treatments to S. BARLEY, all flanked by plots of w. barley, seed treated triadimenol + fuberidazole and crop sprayed with fenpropimorph: All combinations of:-

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1. SD SB Seed dressings:
 NONE None
 TRI+FUB Triadimenol + fuberidazole

2. VAR SB Variety:
 G PROMIS Golden Promise
 KEG Keg

3. FS SB Foliar sprays:
 NONE None
 FENPROP Fenpropimorph as above
 ETHIRIM Ethirimol as above

NOTE: Spring barley, variety Golden Promise, given no mildewicidal seed dressing, was sown on headlands and sprayed tridemorph at 0.52 kg in 250 l on 3 May, 1984.

Standard applications: 'Nitro-Chalk' at 550 kg. Weedkillers: Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 1.4 l) in 250 l to w. barley only. 3, 6-dichloropicolinic acid 0.07 kg with bromoxynil octanoate at 3.4 kg and mecoprop at 2.1 kg in 250 l to s. barley only.

Seed: W. barley: Maris Otter, sown at 190 kg.
 S. barley: Golden Promise and Keg, both sown at 160 kg.

Cultivations, etc.: - Heavy spring-tine cultivated twice, spring-tine cultivated with crumbler attached w. barley plots only: w. barley seed sown: 2 Nov, 1983. Heavy spring-tine cultivated s. barley plots: 20 Mar, 1984. Spring-tine cultivated with crumbler attached and s. barley seed sown: 21 Mar. N applied: 22 Mar. 'Brittox' applied: 3 May. 3, 6-dichloropicolinic acid with bromoxynil octanoate and mecoprop applied: 30 May. Combine harvested w. barley: 30 July. Combine harvested s. barley: 17 Aug. Previous crops: W. oats 1982, potatoes 1983.

NOTES: (1) The incidence of barley powdery mildew (*Erysiphe graminis* f. sp. *hordei*) and leaf blotch (*Rhynchosporium secalis*) were assessed before and after application of fungicide treatments. Mildew and leaf blotch assessments were made on four occasions on spring barley in May, June and July. The sensitivity of powdery mildew to triadimenol was measured in June.
 (2) Because of an error at drilling yields from three plots were not taken and estimated values were used in the analysis. Treatment combinations affected on winter barley were

SD SB	NONE	NONE	TRI+FUB
VAR SB	KEG	KEG	KEG
FS SB	NONE	NONE	NONE
POSITION	S WEST	N EAST	S WEST

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WINTER BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

VAR SB	G PROMIS	KEG	MEAN			
SD SB						
NONE	7.61	7.44	7.53			
TRI+FUB	7.53	7.75	7.64			
MEAN	7.57	7.60	7.58			
FS SB	NONE	FENPROP	ETHIRIM	MEAN		
SD SB						
NONE	7.20	7.65	7.72	7.53		
TRI+FUB	7.74	7.66	7.53	7.64		
MEAN	7.47	7.66	7.63	7.58		
FS SB	NONE	FENPROP	ETHIRIM	MEAN		
VAR SB						
G PROMIS	7.65	7.52	7.54	7.57		
KEG	7.28	7.79	7.72	7.60		
MEAN	7.47	7.66	7.63	7.58		
POSITION	N EAST	S WEST	MEAN			
SD SB						
NONE	7.68	7.37	7.53			
TRI+FUB	7.73	7.55	7.64			
MEAN	7.71	7.46	7.58			
POSITION	N EAST	S WEST	MEAN			
VAR SB						
G PROMIS	7.64	7.51	7.57			
KEG	7.78	7.42	7.60			
MEAN	7.71	7.46	7.58			
POSITION	N EAST	S WEST	MEAN			
FS SB						
NONE	7.53	7.40	7.47			
FENPROP	7.78	7.53	7.66			
ETHIRIM	7.80	7.45	7.63			
MEAN	7.71	7.46	7.58			
VAR SB	G PROMIS	FENPROP	ETHIRIM	KEG		
FS SB	NONE			NONE	FENPROP	ETHIRIM
SD SB						
NONE	7.64	7.54	7.64	6.76	7.77	7.80
TRI+FUB	7.67	7.50	7.43	7.80	7.81	7.63

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WINTER BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

VAR SB	G PROMIS	KEG	
POSITION	N EAST	S WEST	S WEST
SD SB			
NONE	7.62	7.59	7.15
TRI+FUB	7.65	7.42	7.69

FS SB	NONE	FENPROP		ETHIRIM	
POSITION	N EAST	S WEST	N EAST	S WEST	S WEST
SD SB					
NONE	7.38	7.03	7.77	7.54	7.54
TRI+FUB	7.69	7.78	7.80	7.52	7.36

FS SB	NONE	FENPROP		ETHIRIM	
POSITION	N EAST	S WEST	N EAST	S WEST	S WEST
VAR SB					
G PROMIS	7.78	7.53	7.58	7.46	7.52
KEG	7.29	7.28	7.98	7.60	7.38

FS SB	NONE	FENPROP		ETHIRIM		
POSITION	N EAST	S WEST	N EAST	S WEST	N EAST	S WEST
SD SB						
NONE	7.80	7.49	7.52	7.56	7.55	7.73
VAR SB						
KEG	6.95	6.57	8.01	7.52	8.25	7.36
TRI+FUB	7.76	7.57	7.64	7.37	7.55	7.32
G PROMIS						
KEG	7.63	7.98	7.95	7.68	7.86	7.40

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	SD SB	VAR SB	FS SB	POSITION
SED	0.100	0.100	0.123	0.074
TABLE	SD SB	SD SB	VAR SB	SD SB
	VAR SB	FS SB	FS SB	POSITION
SED	0.142	0.173	0.173	0.124
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
SD SB				0.104
TABLE	VAR SB	FS SB	SD SB	SD SB
	POSITION	POSITION	VAR SB	VAR SB
			FS SB	POSITION
SED	0.124	0.152	0.245	0.176
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VAR SB	0.104			
FS SB		0.128		
SD SB.VAR SB				0.148

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WINTER BARLEY

GRAIN TONNES/HECTARE

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	SD SB FS SB POSITION	VAR SB FS SB POSITION	SD SB VAR SB FS SB POSITION
SED	0.215	0.215	0.305
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
SD SB.FS SB	0.181		
VAR SB.FS SB		0.181	
SD SB.VAR SB.FS SB			0.255

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.245	3.2
BLOCK.WP.SP	10	0.255	3.4

GRAIN MEAN DM% 88.7

SUB PLOT AREA HARVESTED 0.00220

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SPRING BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

VAR SB	G PROMIS	KEG	MEAN	
SD SB				
NONE	3.77	4.63	4.20	
TRI+FUB	4.12	4.04	4.08	
MEAN	3.95	4.34	4.14	
FS SB	NONE	FENPROP	ETHIRIM	MEAN
SD SB				
NONE	3.93	4.23	4.45	4.20
TRI+FUB	3.76	4.68	3.81	4.08
MEAN	3.84	4.46	4.13	4.14
FS SB	NONE	FENPROP	ETHIRIM	MEAN
VAR SB				
G PROMIS	3.67	4.20	3.97	3.95
KEG	4.01	4.71	4.28	4.34
MEAN	3.84	4.46	4.13	4.14
VAR SB	G PROMIS	KEG		
FS SB	NONE	FENPROP	ETHIRIM	
SD SB				
NONE	3.62	3.80	3.90	4.23
TRI+FUB	3.72	4.60	4.05	3.79
				4.66
				5.00
				3.57

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	SD SB	VAR SB	FS SB	SD SB VAR SB

SED	0.309	0.309	0.378	0.437
TABLE	SD SB	VAR SB	SD SB	
	FS SB	FS SB	VAR SB	FS SB

SED	0.535	0.535	0.756	

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.756	18.3

GRAIN MEAN DM% 85.7

PLOT AREA HARVESTED 0.00220