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# Yields of the Field Experiments 1981

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## 81/R/B/2 Rhynchosporium Studies - W. Barley

### Rothamsted Research

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81/R/B/2

WINTER BARLEY

RHYNCHOSPORIUM STUDIES

Object: To study the effects of interference between plots of w. barley with different amounts of *Rhynchosporium secalis* - Gt. Knott II.

Sponsors: J.F. Jenkyn, A. Bainbridge, O.J. Stedman, G.V. Dyke.

Design: Two Series each a line of 36 plots with single external flanking plots. Because the line of Series II was broken by a dell an extra flanking plot was sown on each side of the dell. Each line was a serially balanced sequence such that each of 4 treatments had as neighbours all ordered pairs of the other 3 treatments, once each.

Whole plot dimensions: 8.84 x 4.27.

Treatments:

TREATMNT Treatment with infected straw, sowing dates and times of applying fungicide:

Series I

ST SEP No fungicide against *R. secalis*. Infected straw worked in to seedbed, sown 27 Sept, 1980  
PA SEP Prochloraz in autumn, sown 27 Sept  
PS SEP Prochloraz in spring, sown 27 Sept  
PAS SEP Prochloraz in autumn and spring, sown 27 Sept

Series II

ST SEP As for Series I  
O FEB No fungicide against *R. secalis*, sown 19 Feb, 1981  
PS FEB Prochloraz in spring, sown 19 Feb  
PSS FEB Prochloraz in spring and early summer, sown 19 Feb

- NOTES: (1) The effects of treatments to neighbouring plots (left - LHN, right - RHN) were estimated. In this experiment 'left' was West, 'right' was East. The analysis presented assumes a Fourier curve with 4 terms, 2 sine and 2 cosine to represent positional variation.
- (2) The two Series were separated by 30.8 m and surrounded by the relatively *Rhynchosporium* resistant variety Athene, seed dressed ethirimol, sown at 160 kg on 27 Sept, 1980, sprayed prochloraz at 0.4 kg in 340 l on 7 Apr, 1981.
- (3) Straw was applied at 610 kg to ST SEP plots on 26 Sept.
- (4) Prochloraz was applied at 0.4 kg in 340 l on 22 Dec to PA SEP and PAS SEP plots, on 3 Mar, 1981 to PS SEP and PAS SEP, PS FEB and PSS FEB plots and additionally on 21 May to PSS FEB plots.

Basal applications: Manures: (10:23:23) at 250 kg. 'Nitro-Chalk' at 135 kg followed by 420 kg. Weedkillers: Diquat at 0.59 kg ion in 220 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.7 l) in 250 l.

Seed: Maris Otter, sown at 160 kg.

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Cultivations, etc.: - Diquat applied: 19 Sept, 1980. NPK applied: 23 Sept. Heavy spring-tine cultivated twice: 24 Sept. Heavy spring-tine cultivated: 25 Sept. Rotary harrowed: 26 Sept. Spring-tine cultivated: 18 Feb, 1981 (Series II only). First N applied: 19 Feb. Second N applied: 9 Apr. 'Brittox' applied: 23 Apr. Combine harvested: 30 July (Series I), 17 Aug (Series II). Previous crops: S. barley 1979, s. beans 1980.

NOTE: Leaf diseases were assessed at frequent intervals between November and July.

SERIES I

GRAIN TONNES/HECTARE

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

TREATMNT	ST SEP	PA SEP	PS SEP	PAS SEP
	5.92	5.44	6.06	5.44
LHN TREATMNT	ST SEP	PA SEP	PS SEP	PAS SEP
ST SEP		5.97	5.94	5.86
PA SEP	6.29		5.12	4.91
PS SEP	6.26	5.86		6.06
PAS SEP	4.83	5.58	5.91	
RHN TREATMNT	ST SEP	PA SEP	PS SEP	PAS SEP
ST SEP		6.40	5.98	5.39
PA SEP	5.47		5.50	5.34
PS SEP	6.16	5.68		6.35
PAS SEP	5.80	4.75	5.77	

GRAND MEAN 5.72

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

TABLE	TREATMNT	TREATMNT LHN	TREATMNT RHN
-----			
SED	0.173	0.338	0.339

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

STRATUM	DF	SE	CV%
WP	12	0.356	6.2

GRAIN MEAN DM% 85.1

PLOT AREA HARVESTED 0.00189

81/R/B/2 SERIES II

GRAIN TONNES/HECTARE

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

TREATMNT	ST SEP	0 FEB	PS FEB	PSS FEB
	5.99	4.67	4.49	4.75
LHN	ST SEP	0 FEB	PS FEB	PSS FEB
TREATMNT				
ST SEP		6.46	6.04	5.48
0 FEB	4.82		4.57	4.63
PS FEB	4.56	4.29		4.61
PSS FEB	4.41	4.91	4.94	
RHN	ST SEP	0 FEB	PS FEB	PSS FEB
TREATMNT				
ST SEP		6.08	6.13	5.77
0 FEB	4.84		4.39	4.80
PS FEB	4.44	4.68		4.34
PSS FEB	4.39	4.90	4.98	

GRAND MEAN 4.98

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

TABLE	TREATMNT	TREATMNT LHN	TREATMNT RHN
-----			
SED	0.189	0.383	0.381

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

STRATUM	DF	SE	CV%
WP	12	0.395	7.9

GRAIN MEAN DM% 86.5

PLOT AREA HARVESTED 0.00189