

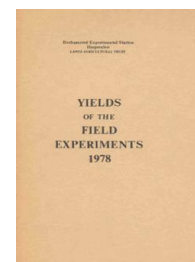
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78/S/C/1 Varieties, N and Ccc - Barley

Rothamsted Research

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78/S/CS/1

VARIETIES, N AND CCC

Object: To study the effects of varieties, fungicides, and rates and times of applying nitrogen fertiliser on the incidence of foliar diseases and on yield of barley - Saxmundham, Oldershaw's and Garner's plots.

Sponsors: F.V. Widdowson, J.F. Jenkyn, A. Penny.

The 13th year, barley.

For previous years see 66/C/30(t), 67/C/23(t), 68/C/39, 69-70/S/CS/1, 71/S/CS/1(t), 72/S/CS/1(t) and 73-77/S/CS/1.

Design: A single replicate of 2^6 in 4 blocks of 4 plots each split into half and quarter plots, plus one additional plot per block similarly split. Treatments to wheat 1966-1976 have been ignored.

Whole plot dimensions: 5.49 x 40.2.

Treatments (cumulative to 1977): All combinations of:-

Whole plots

1. VARIETY Varieties:-

JULIA
WING

2. MILDFUNG Fungicides to control mildew:

NONE None
ETH+TRI Ethirimol seed dressing + tridemorph foliar spray (0.53 kg applied with the weedkillers on 18 May, 1978)

Half plots

3. S N RATE Rates of solid nitrogen fertiliser (kg N):

50
100

4. S N TIME Times of applying solid nitrogen fertiliser:

SEEDBED Seedbed on 6 Apr
TOPDRESS Top dressed on 18 May

Quarter plots

5. L N RATE Rates of liquid nitrogen fertiliser (kg N):

0 None
25 on 7 June + 25 on 21 June

6. RUSTFUNG Fungicide to control rust:

NONE None
BENODANI Benodanil foliar spray (1.12 kg in 280 l on 21 June and 6 July)

78/S/CS/1

XTRA WMR Plus one additional whole plot per block sown to variety Wing, seed dressed ethirimol, given foliar sprays of tridemorph and benodanil and testing all combinations of:

Half plots

1. S N Rates of solid nitrogen fertiliser (kg N):
25+25 25 to seedbed + 25 top dressed
50+50 50 to seedbed + 50 top dressed
2. GRTH REG Growth regulator:
NONE None
MEP+ETH Mepiquat chloride + ethephon ('BAS 09800W' at 2.0 l in 250 l on 8 June)

Quarter plots

3. L N Rates of liquid nitrogen fertiliser (kg N):
0 None
25+25 25 on 7 June + 25 on 21 June

Basal applications: Manures: (7.5:17.5:17.5) at 250 kg. Weedkillers: Ioxynil at 0.42 kg with mecoprop at 1.3 kg in 220 l.

Seed: sown at 190 kg.

Cultivations, etc.:— Ploughed: 14 Sept, 1977. NPK applied, seed sown: 7 Apr, 1978. Weedkillers applied: 18 May. Combine harvested: 5 Sept.

GRAIN TONNES/HECTARE

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

MILDFUNG VARIETY	NONE	ETH+TRI	MEAN
JULIA	5.27	5.37	5.32
WING	5.18	5.37	5.28
MEAN	5.23	5.37	5.30
S N RATE VARIETY	50	100	MEAN
JULIA	5.38	5.26	5.32
WING	5.31	5.24	5.28
MEAN	5.34	5.25	5.30
S N RATE MILDFUNG	50	100	MEAN
NONE	5.27	5.19	5.23
ETH+TRI	5.42	5.32	5.37
MEAN	5.34	5.25	5.30

78/S/CS/1

GRAIN TONNES/HECTARE

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

S N TIME VARIETY	SEEDBED	TOPDRESS	MEAN
JULIA	5.67	4.97	5.32
WING	5.60	4.95	5.28
MEAN	5.63	4.96	5.30
S N TIME MILDFUNG	SEEDBED	TOPDRESS	MEAN
NONE	5.56	4.90	5.23
ETH+TRI	5.71	5.03	5.37
MEAN	5.63	4.96	5.30
S N TIME S N RATE	SEEDBED	TOPDRESS	MEAN
50	5.60	5.09	5.34
100	5.67	4.84	5.25
MEAN	5.63	4.96	5.30
L N RATE VARIETY	0	50	MEAN
JULIA	5.43	5.21	5.32
WING	5.37	5.18	5.28
MEAN	5.40	5.20	5.30
L N RATE MILDFUNG	0	50	MEAN
NONE	5.31	5.14	5.23
ETH+TRI	5.49	5.25	5.37
MEAN	5.40	5.20	5.30
L N RATE S N RATE	0	50	MEAN
50	5.42	5.27	5.34
100	5.38	5.12	5.25
MEAN	5.40	5.20	5.30
L N RATE S N TIME	0	50	MEAN
SEEDBED	5.75	5.51	5.63
TOPDRESS	5.04	4.88	4.96
MEAN	5.40	5.20	5.30
RUSTFUNG VARIETY	NONE	BENODANI	MEAN
JULIA	5.19	5.45	5.32
WING	5.03	5.52	5.28
MEAN	5.11	5.48	5.30

78/S/CS/1

GRAIN TONNES/HECTARE

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

RUSTFUNG	NONE	BENODANI	MEAN	
MILDFUNG				
NONE	5.06	5.40	5.23	
ETH+TRI	5.17	5.57	5.37	
MEAN	5.11	5.48	5.30	
RUSTFUNG	NONE	BENODANI	MEAN	
S N RATE				
50	5.18	5.51	5.34	
100	5.05	5.46	5.25	
MEAN	5.11	5.48	5.30	
RUSTFUNG	NONE	BENODANI	MEAN	
S N TIME				
SEEDBED	5.43	5.84	5.63	
TOPDRESS	4.79	5.13	4.96	
MEAN	5.11	5.48	5.30	
RUSTFUNG	NONE	BENODANI	MEAN	
L N RATE				
0	5.21	5.59	5.40	
50	5.02	5.38	5.20	
MEAN	5.11	5.48	5.30	
MILDFUNG	NONE		ETH+TRI	
S N RATE	50	100	50	100
VARIETY				
JULIA	5.32	5.22	5.43	5.30
WING	5.21	5.15	5.41	5.34
MILDFUNG	NONE		ETH+TRI	
S N TIME	SEEDBED	TOPDRESS	SEEDBED	TOPDRESS
VARIETY				
JULIA	5.64	4.91	5.70	5.04
WING	5.47	4.89	5.73	5.02
S N RATE	50		100	
S N TIME	SEEDBED	TOPDRESS	SEEDBED	TOPDRESS
VARIETY				
JULIA	5.65	5.11	5.68	4.84
WING	5.55	5.07	5.65	4.84
S N RATE	50		100	
S N TIME	SEEDBED	TOPDRESS	SEEDBED	TOPDRESS
MILDFUNG				
NONE	5.57	4.96	5.54	4.84
ETH+TRI	5.63	5.21	5.79	4.85
MILDFUNG	NONE		ETH+TRI	
L N RATE	0	50	0	50
VARIETY				
JULIA	5.37	5.18	5.48	5.25
WING	5.25	5.11	5.49	5.25

78/S/CS/1

GRAIN TONNES/HECTARE

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

S N RATE	50		100	
L N RATE	0	50	0	50
VARIETY				
JULIA	5.46	5.29	5.39	5.13
WING	5.37	5.25	5.37	5.11

S N RATE	50		100	
L N RATE	0	50	0	50
MILDFUNG				
NONE	5.32	5.22	5.30	5.07
ETH+TRI	5.52	5.33	5.46	5.18

S N TIME	SEEDBED		TOPDRESS	
L N RATE	0	50	0	50
VARIETY				
JULIA	5.82	5.52	5.04	4.91
WING	5.69	5.51	5.05	4.85

S N TIME	SEEDBED		TOPDRESS	
L N RATE	0	50	0	50
MILDFUNG				
NONE	5.66	5.45	4.96	4.84
ETH+TRI	5.85	5.58	5.13	4.93

S N TIME	SEEDBED		TOPDRESS	
L N RATE	0	50	0	50
S N RATE				
50	5.70	5.51	5.14	5.04
100	5.81	5.52	4.95	4.73

MILDFUNG	NONE		ETH+TRI	
RUSTFUNG	NONE BENODANI		NONE BENODANI	
VARIETY				
JULIA	5.16	5.38	5.22	5.51
WING	4.95	5.42	5.11	5.63

S N RATE	50		100	
RUSTFUNG	NONE BENODANI		NONE BENODANI	
VARIETY				
JULIA	5.25	5.50	5.13	5.39
WING	5.10	5.52	4.96	5.52

S N RATE	50		100	
RUSTFUNG	NONE BENODANI		NONE BENODANI	
MILDFUNG				
NONE	5.13	5.40	4.98	5.40
ETH+TRI	5.22	5.62	5.12	5.52

78/S/CS/1

GRAIN TONNES/HECTARE

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

S N TIME RUSTFUNG VARIETY	SEEDBED		TOPDRESS	
	NONE	BENODANI	NONE	BENODANI
JULIA	5.52	5.81	4.87	5.08
WING	5.35	5.86	4.71	5.19

S N TIME RUSTFUNG MILDFUNG	SEEDBED		TOPDRESS	
	NONE	BENODANI	NONE	BENODANI
NONE	5.38	5.73	4.73	5.06
ETH+TRI	5.49	5.94	4.85	5.20

S N TIME RUSTFUNG S N RATE	SEEDBED		TOPDRESS	
	NONE	BENODANI	NONE	BENODANI
50	5.41	5.80	4.95	5.23
100	5.46	5.87	4.64	5.04

L N RATE RUSTFUNG VARIETY	0		50	
	NONE	BENODANI	NONE	BENODANI
JULIA	5.34	5.51	5.04	5.38
WING	5.07	5.67	4.99	5.37

L N RATE RUSTFUNG MILDFUNG	0		50	
	NONE	BENODANI	NONE	BENODANI
NONE	5.09	5.53	5.02	5.27
ETH+TRI	5.32	5.65	5.02	5.49

L N RATE RUSTFUNG S N RATE	0		50	
	NONE	BENODANI	NONE	BENODANI
50	5.28	5.56	5.07	5.47
100	5.14	5.63	4.96	5.29

L N RATE RUSTFUNG S N TIME	0		50	
	NONE	BENODANI	NONE	BENODANI
SEEDBED	5.55	5.96	5.31	5.71
TOPDRESS	4.86	5.23	4.72	5.04

78/S/CS/1

GRAIN TONNES/HECTARE

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

TABLE	VARIETY	MILDFUNG	S N RATE	S N TIME
SED	0.109	0.109	0.046	0.046
TABLE	L N RATE	RUSTFUNG	VARIETY MILDFUNG	VARIETY S N RATE
SED	0.039	0.039	0.154	0.118
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY				0.065
TABLE	MILDFUNG S N RATE	VARIETY S N TIME	MILDFUNG S N TIME	S N RATE S N TIME
SED	0.118	0.118	0.118	0.065
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY		0.065		
MILDFUNG	0.065		0.065	
S N RATE				0.118
S N TIME				0.118
TABLE	VARIETY L N RATE	MILDFUNG L N RATE	S N RATE L N RATE	S N TIME L N RATE
SED	0.116	0.116	0.060	0.060
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY	0.055			
MILDFUNG		0.055		
S N RATE			0.055	
S N TIME				0.055
TABLE	VARIETY RUSTFUNG	MILDFUNG RUSTFUNG	S N RATE RUSTFUNG	S N TIME RUSTFUNG
SED	0.116	0.116	0.060	0.060
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY	0.055			
MILDFUNG		0.055		
S N RATE			0.055	
S N TIME				0.055

78/S/CS/1

GRAIN TONNES/HECTARE

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

TABLE	L N RATE RUSTFUNG	VARIETY MILDFUNG S N RATE	VARIETY MILDFUNG S N TIME	VARIETY S N RATE S N TIME
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SED	0.055	0.167	0.167	0.167
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY				0.092
L N RATE	0.060			
RUSTFUNG	0.060			
VARIETY.MILDFUNG		0.092	0.092	

TABLE	MILDFUNG S N RATE S N TIME	VARIETY MILDFUNG L N RATE	VARIETY S N RATE L N RATE	MILDFUNG S N RATE L N RATE
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SED	0.167	0.164	0.130	0.130
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY			0.085	
MILDFUNG	0.092			0.085
VARIETY.MILDFUNG		0.078		
VARIETY.S N RATE			0.078	
MILDFUNG.S N RATE				0.078

TABLE	VARIETY S N TIME L N RATE	MILDFUNG S N TIME L N RATE	S N RATE S N TIME L N RATE	VARIETY MILDFUNG RUSTFUNG
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SED	0.130	0.130	0.085	0.164
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY	0.085			
MILDFUNG		0.085		
S N RATE			0.130	
S N TIME			0.130	
VARIETY.MILDFUNG				0.078
VARIETY.S N TIME				
MILDFUNG.S N TIME	0.078			
S N RATE.S N TIME		0.078	0.078	

78/S/CS/1

GRAIN TONNES/HECTARE

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

TABLE	VARIETY S N RATE RUSTFUNG	MILDFUNG S N RATE RUSTFUNG	VARIETY S N TIME RUSTFUNG	MILDFUNG S N TIME RUSTFUNG
SED	0.130	0.130	0.130	0.130
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY	0.085		0.085	
MILDFUNG		0.085		0.085
VARIETY.S N RATE	0.078			
MILDFUNG.S N RATE		0.078		
VARIETY.S N TIME			0.078	
MILDFUNG.S N TIME				0.078

TABLE	S N RATE S N TIME RUSTFUNG	VARIETY L N RATE RUSTFUNG	MILDFUNG L N RATE RUSTFUNG	S N RATE L N RATE RUSTFUNG
SED	0.085	0.130	0.130	0.130
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY		0.078		
MILDFUNG			0.078	
S N RATE	0.130			0.078
S N TIME	0.130			
L N RATE				0.085
RUSTFUNG				0.085
S N RATE.S N TIME	0.078			
VARIETY.L N RATE		0.085		
MILDFUNG.L N RATE			0.085	
VARIETY.RUSTFUNG		0.085		
MILDFUNG.RUSTFUNG			0.085	

TABLE	S N TIME L N RATE RUSTFUNG
-------	----------------------------------

SED	0.130
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:	
S N TIME	0.078
L N RATE	0.085
RUSTFUNG	0.085

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

STRATUM	DF	SE	CV%
BLOCK.WP	4	0.218	4.1
BLOCK.WP.HP	5	0.130	2.5
BLOCK.WP.HP.QP	10	0.155	2.9

GRAIN MEAN DM% 83.9

SUB PLOT AREA HARVESTED 0.00479

78/S/CS/1

EXTRA

GRAIN TONNES/HECTARE

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

L N	0	25+25	MEAN
S N			
25+25	5.63	5.61	5.62
50+50	5.90	5.49	5.69
MEAN	5.76	5.55	5.66
GRTH REG	NONE	MEP+ETH	MEAN
S N			
25+25	5.60	5.64	5.62
50+50	5.74	5.64	5.69
MEAN	5.67	5.64	5.66
GRTH REG	NONE	MEP+ETH	MEAN
L N			
0	5.76	5.77	5.76
25+25	5.59	5.51	5.55
MEAN	5.67	5.64	5.66
L N	0	25+25	
GRTH REG	NONE	MEP+ETH	NONE MEP+ETH
S N			
25+25	5.63	5.63	5.57 5.65
50+50	5.89	5.91	5.60 5.37

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

TABLE	S N	L N	GRTH REG	S N L N
SED	0.175	0.095	0.175	0.199
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
S N				0.134

TABLE	S N GRTH REG	L N GRTH REG	S N L N GRTH REG
SED	0.247	0.199	0.281
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
S N	0.208		0.247
GRTH REG	0.208	0.134	0.247
S N.GRTH REG			0.189

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

STRATUM	DF	SE	CV%
BLOCK.WP.HP.QP	4	0.189	3.3
GRAIN MEAN DM% 83.1			
SUB PLOT AREA HARVESTED	0.00479		