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Yields of the Field Experiments 1977

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

Rothamsted Research

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77/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, A.E. Johnston

The 12th 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 73-76/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: 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

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 7 Apr, 1977
TOPDRESS Top dressed on 19 May

Quarter plots

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

0
50 (half 15 June, half 6 July)

6. RUSTFUNG Fungicide to control rust:

NONE None
BENODANI Benodanil foliar spray

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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

Quarter plots

2. L N

Rates of liquid nitrogen fertiliser (kg N):

0

None

25+25

25 on 15 June + 25 on 6 July

NOTES: (1) Tridemorph at 0.53 kg applied with the weedkillers on 25 May.

(2) Benodanil applied at 1.12 kg in 340 l on 15 June and 6 July.

Basal applications: Manures: P_2O_5 at 50 kg with K_2O at 50 kg applied as (0:20:20).

Weedkillers: Ioxynil at 0.42 kg with mecoprop at 1.3 kg applied in 340 l.

Seed: Sown at 190 kg.

Cultivations, etc.:— Ploughed: 23 Nov, 1976. Seed sown, PK applied: 6 Apr, 1977.

Weedkillers applied: 25 May. Combine harvested: 8 Sept.

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GRAIN TONNES/HECTARE

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

MILDFUNG	NONE	ETH+TRI	MEAN
VARIETY			
JULIA	4.34	4.56	4.45
WING	4.35	4.62	4.48
MEAN	4.34	4.59	4.46
S N RATE	50	100	MEAN
VARIETY			
JULIA	4.02	4.87	4.45
WING	4.13	4.83	4.48
MEAN	4.08	4.85	4.46
S N RATE	50	100	MEAN
MILDFUNG			
NONE	4.06	4.62	4.34
ETH+TRI	4.09	5.08	4.59
MEAN	4.08	4.85	4.46
S N TIME	SEEDBED	TOPDRESS	MEAN
VARIETY			
JULIA	4.86	4.03	4.45
WING	4.80	4.16	4.48
MEAN	4.83	4.09	4.46
S N TIME	SEEDBED	TOPDRESS	MEAN
MILDFUNG			
NONE	4.80	3.89	4.34
ETH+TRI	4.87	4.30	4.59
MEAN	4.83	4.09	4.46
S N TIME	SEEDBED	TOPDRESS	MEAN
S N RATE			
50	4.26	3.89	4.08
100	5.40	4.30	4.85
MEAN	4.83	4.09	4.46
L N RATE	0	50	MEAN
VARIETY			
JULIA	4.38	4.52	4.45
WING	4.42	4.54	4.48
MEAN	4.40	4.53	4.46
L N RATE	0	50	MEAN
MILDFUNG			
NONE	4.28	4.40	4.34
ETH+TRI	4.52	4.65	4.59
MEAN	4.40	4.53	4.46

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GRAIN TONNES/HECTARE

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

L N RATE	0	50	MEAN	
S N RATE				
50	3.92	4.23	4.08	
100	4.88	4.83	4.85	
MEAN	4.40	4.53	4.46	
L N RATE	0	50	MEAN	
S N TIME				
SEEDBED	4.72	4.95	4.83	
TOPDRESS	4.08	4.11	4.09	
MEAN	4.40	4.53	4.46	
RUSTFUNG	NONE	BENODANI	MEAN	
VARIETY				
JULIA	4.36	4.53	4.45	
WING	4.34	4.62	4.48	
MEAN	4.35	4.58	4.46	
RUSTFUNG	NONE	BENODANI	MEAN	
MILDFUNG				
NONE	4.26	4.42	4.34	
ETH+TRI	4.44	4.73	4.59	
MEAN	4.35	4.58	4.46	
RUSTFUNG	NONE	BENODANI	MEAN	
S N RATE				
50	3.99	4.16	4.08	
100	4.71	4.99	4.85	
MEAN	4.35	4.58	4.46	
RUSTFUNG	NONE	BENODANI	MEAN	
S N TIME				
SEEDBED	4.75	4.92	4.83	
TOPDRESS	3.95	4.24	4.09	
MEAN	4.35	4.58	4.46	
RUSTFUNG	NONE	BENODANI	MEAN	
L N RATE				
0	4.31	4.49	4.40	
50	4.39	4.67	4.53	
MEAN	4.35	4.58	4.46	
MILDFUNG	NONE	ETH+TRI		
S N RATE	50	100	50	100
VARIETY				
JULIA	4.02	4.66	4.02	5.09
WING	4.11	4.59	4.15	5.08

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GRAIN TONNES/HECTARE

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

MILDFUNG	NONE		ETH+TRI	
S N TIME	SEEDBED	TOPDRESS	SEEDBED	TOPDRESS
VARIETY				
JULIA	4.92	3.75	4.80	4.31
WING	4.67	4.02	4.93	4.30
S N RATE	50		100	
S N TIME	SEEDBED	TOPDRESS	SEEDBED	TOPDRESS
VARIETY				
JULIA	4.20	3.84	5.53	4.22
WING	4.33	3.93	5.28	4.39
S N RATE	50		100	
S N TIME	SEEDBED	TOPDRESS	SEEDBED	TOPDRESS
MILDFUNG				
NONE	4.39	3.74	5.20	4.04
ETH+TRI	4.14	4.03	5.60	4.57
MILDFUNG	NONE		ETH+TRI	
L N RATE	0	50	0	50
VARIETY				
JULIA	4.29	4.39	4.46	4.65
WING	4.28	4.42	4.57	4.66
S N RATE	50		100	
L N RATE	0	50	0	50
VARIETY				
JULIA	3.89	4.15	4.86	4.89
WING	3.95	4.31	4.90	4.76
S N RATE	50		100	
L N RATE	0	50	0	50
MILDFUNG				
NONE	3.90	4.22	4.66	4.58
ETH+TRI	3.94	4.24	5.10	5.07
S N TIME	SEEDBED		TOPDRESS	
L N RATE	0	50	0	50
VARIETY				
JULIA	4.75	4.98	4.00	4.06
WING	4.69	4.91	4.15	4.17
S N TIME	SEEDBED		TOPDRESS	
L N RATE	0	50	0	50
MILDFUNG				
NONE	4.72	4.88	3.85	3.92
ETH+TRI	4.73	5.01	4.31	4.30
S N TIME	SEEDBED		TOPDRESS	
L N RATE	0	50	0	50
S N RATE				
50	4.06	4.47	3.78	3.99
100	5.39	5.42	4.37	4.24

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GRAIN TONNES/HECTARE

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

MILDFUNG	NONE		ETH+TRI	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
VARIETY				
JULIA	4.28	4.40	4.45	4.66
WING	4.24	4.45	4.43	4.80
S N RATE	50		100	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
VARIETY				
JULIA	3.98	4.06	4.75	5.00
WING	4.00	4.26	4.68	4.99
S N RATE	50		100	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
MILDFUNG				
NONE	3.98	4.14	4.54	4.70
ETH+TRI	4.00	4.18	4.88	5.28
S N TIME	SEEDBED		TOPDRESS	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
VARIETY				
JULIA	4.81	4.92	3.92	4.14
WING	4.69	4.91	3.99	4.33
S N TIME	SEEDBED		TOPDRESS	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
MILDFUNG				
NONE	4.73	4.86	3.79	3.99
ETH+TRI	4.77	4.97	4.11	4.49
S N TIME	SEEDBED		TOPDRESS	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
S N RATE				
50	4.24	4.29	3.74	4.03
100	5.26	5.54	4.16	4.44
L N RATE	0		50	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
VARIETY				
JULIA	4.33	4.42	4.40	4.64
WING	4.30	4.55	4.38	4.70
L N RATE	0		50	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
MILDFUNG				
NONE	4.21	4.36	4.32	4.49
ETH+TRI	4.42	4.61	4.46	4.85
L N RATE	0		50	
RUSTFUNG	NONE	BENODANI	NONE	BENODANI
S N RATE				
50	3.92	3.92	4.06	4.40
100	4.71	5.05	4.71	4.94

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GRAIN TONNES/HECTARE

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

L N RATE	0		50	
RUSTFUNG	NONE BENODANI		NONE BENODANI	
S N TIME				
SEEDBED	4.72	4.73	4.79	5.11
TOPDRESS	3.91	4.25	3.99	4.23

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

TABLE	VARIETY	MILDFUNG	S N RATE	S N TIME
SED	0.158	0.158	0.087	0.087

TABLE	L N RATE	RUSTFUNG	VARIETY MILDFUNG	VARIETY S N RATE
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SED	0.062	0.062	0.224	0.181
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY				0.123

TABLE	MILDFUNG S N RATE	VARIETY S N TIME	MILDFUNG S N TIME	S N RATE S N TIME
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SED	0.181	0.181	0.181	0.123
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY		0.123		
MILDFUNG	0.123		0.123	
S N RATE				0.181
S N TIME				0.181

TABLE	VARIETY L N RATE	MILDFUNG L N RATE	S N RATE L N RATE	S N TIME L N RATE
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SED	0.170	0.170	0.107	0.107
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY	0.088			
MILDFUNG		0.088		
S N RATE			0.088	
S N TIME				0.088

TABLE	VARIETY RUSTFUNG	MILDFUNG RUSTFUNG	S N RATE RUSTFUNG	S N TIME RUSTFUNG
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SED	0.170	0.170	0.107	0.107
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY	0.088			
MILDFUNG		0.088		
S N RATE			0.088	
S N TIME				0.088

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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
SED	0.088	0.256	0.256	0.256
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY				0.174
L N RATE	0.107			
RUSTFUNG	0.107			
VARIETY.MILDFUNG		0.174	0.174	
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
SED	0.256	0.241	0.201	0.201
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY			0.151	
MILDFUNG	0.174			0.151
VARIETY.MILDFUNG		0.124		
VARIETY.S N RATE			0.124	
MILDFUNG.S N RATE				0.124
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
SED	0.201	0.201	0.151	0.241
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY	0.151			
MILDFUNG		0.151		
S N RATE			0.201	
S N TIME			0.201	
VARIETY.MILDFUNG				0.124
VARIETY.S N TIME	0.124			
MILDFUNG.S N TIME		0.124		
S N RATE.S N TIME			0.124	
TABLE	VARIETY S N RATE RUSTFUNG	MILDFUNG S N RATE RUSTFUNG	VARIETY S N TIME RUSTFUNG	MILDFUNG S N TIME RUSTFUNG
SED	0.201	0.201	0.201	0.201
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY	0.151		0.151	
MILDFUNG		0.151		0.151
VARIETY.S N RATE	0.124			
MILDFUNG.S N RATE		0.124		
VARIETY.S N TIME			0.124	
MILDFUNG.S N TIME				0.124

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GRAIN TONNES/HECTARE

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

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	0.151	0.201	0.201	0.201
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
VARIETY		0.124		
MILDFUNG			0.124	
S N RATE	0.201			0.124
S N TIME	0.201			
L N RATE				0.151
RUSTFUNG				0.151
S N RATE.S N TIME	0.124			
VARIETY.L N RATE		0.151		
MILDFUNG.L N RATE			0.151	
VARIETY.RUSTFUNG		0.151		
MILDFUNG.RUSTFUNG			0.151	

TABLE	S N TIME L N RATE RUSTFUNG
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SED	0.201
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:	
S N TIME	0.124
L N RATE	0.151
RUSTFUNG	0.151

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

STRATUM	DF	SE	CV%
BLOCK.WP	4	0.317	7.1
BLOCK.WP.HP	5	0.246	5.5
BLOCK.WP.HP.QP	10	0.249	5.6

GRAIN MEAN DM% 84.2

SUB PLOT AREA HARVESTED 0.00479

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XTRA WMR

GRAIN TONNES/HECTARE

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

S N	25+25	50+50	MEAN
L N			
25+25	4.47	5.45	4.96
50+50	4.74	5.45	5.10
MEAN	4.60	5.45	5.03

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

TABLE	S N	L N	S N L N
SED	0.116	0.100	0.154
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
S N			0.142

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

STRATUM	DF	SE	CV%
BLOCK.WP.HP.QP	6	0.201	4.0

GRAIN MEAN DM% 83.9

SUB PLOT AREA HARVESTED 0.00479