ROTHAMSTED RESEARCH

Yields of the Field Experiments 1975

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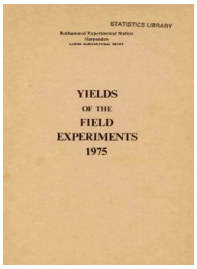

Barley

Rothamsted Research

Rothamsted Research (1976) *Barley ;* Yields Of The Field Experiments 1975, pp 305 - 335 **- DOI: https://doi.org/10.23637/ERADOC-1-141**

75/R/B/1

WINTER BARLEY

FUNGICIDES AND MILDEW

Object: To study the effects of applying tridemorph on one or two occasions on the incidence of mildew and the yield of winter barley - Fosters West.

Sponsors: A. Bainbridge, J.F. Jenkyn, M. Finney.

Design: 4 randomised blocks of 3 plots.

Whole plot dimensions: 4.27 x 9.14.

Treatments: Times of applying tridemorph:-

	TRIDEMOR
None	NONE
Once, 20 May	ONCE
Twice, 20 May, 13 June	TWICE

NOTE: Tridemorph was applied at 0.53 kg in 340 l.

Basal applications: Manures: (0:20:20) at 310 kg combine drilled, 'Nitro-Chalk' at 410 kg. Weedkiller: Ioxynil with mecroprop ('Actril C' at 7.0 l in 220 l).

Seed: Senta, sown at 160 kg.

Cultivations, etc.:- Rotary harrowed: 5 Dec, 1974. Seed sown, harrowed: 6 Dec. N applied: 25 Apr, 1975. Weedkiller applied: 19 May. Combine harvested: 30 July. Previous crops: Barley 1973, fallow 1974.

NOTE: Leaves of mildewed plants were fed C^{14} and assessed after 24 hours and at harvest for distributions of C^{14} within the plant. Mildew assessments were made throughout the season.

https://doi.org/10.23637/ERADOC-1-141

75/R/B/1

*** TABLES OF MEANS ***

GRAIN TONNES/HECTARE

TRIDEMOR	NONE	ONCE	TWICE	MEAN
	3.83	4.66	4.39	4.30

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

TABLE	TRIDEMOR
SED	0.354

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.501	11.7

GRAIN MEAN DM% 86.1

PLOT AREA HARVESTED 0.00260

https://doi.org/10.23637/ERADOC-1-141

75/R/B/2

WINTER BARLEY

FOLIAR DISEASES

Object: To study the effects of different amounts of infected straw, seed infection and seed dressing on incidence of Rhynchosporium and yield of winter barley - Pastures.

Sponsors: J.F. Jenkyn, J. King (M.A.F.F.).

Design: 2 randomised blocks of 12 plots.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

1. Rate of applying straw, infected with Rhynchosporium, to seedbed: — STRAW RT
   - None — NONE
   - Little (66 kg/ha) — LITTLE
   - Much (584 kg/ha) — MUCH
2. Seed infection with Rhynchosporium: — SEED INF
   - None — NONE
   - Infected — INFECTED
3. Seed dressing: — SEED DRS
   - None — NONE
   - Fungicide (Mercury as 'Agrosan GN' at 2.2 gm/kg of seed) — FUNGCIDE

Basal applications: Manures: (0:20:20) at 250 kg combine drilled. 'Nitro-Chalk' at 240 kg. Weedkillers: Mecoprop ('Compitox Extra' at 2.8 l) plus bromoxynil with ioxynil ('Oxytril CM' at 1.4 l) in 220 l. Fungicide: Ethirimol at 0.35 kg in 340 l. Irrigation: 5 mm applied on each of 7 occasions.

Seed: Maris Otter, sown at 160 kg.

Cultivations, etc.:- Chisel ploughed twice: 9 Dec, 1974. Spring-tine cultivated, straw applied and all plots rotary cultivated: 10 Dec. Seed sown and cultivated in: 18 Dec. N applied: 5 Apr, 1975. Weedkiller applied: 9 May. Ethirimol applied: 5 June. Water applied: 25, 26 and 28 June, 5, 12, 19 and 26 July. Combine harvested: 30 July. Previous crops: Beans 1973, potatoes 1974.

NOTE: Rhynchosporium was assessed on 8 May and 8 July.

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75/R/B/2

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

SEED INF STRAW RT	NONE	INFECTED	MEAN
NONE	6.04	5.51	5.78
LITTLE	5.20	5.75	5.47
MUCH	5.50	5.54	5.52
MEAN	5.58	5.60	5.59

SEED DRS STRAW RT	NONE	FUNGCIDE	MEAN
NONE	5.51	6.04	5.78
LITTLE	5.58	5.36	5.47
MUCH	5.30	5.75	5.52
MEAN	5.46	5.72	5.59

SEED DRS SEED INF	NONE	FUNGCIDE	MEAN
NONE	5.38	5.78	5.58
INFECTED	5.55	5.65	5.60
MEAN	5.46	5.72	5.59

SEED INF	NONE		INFECTED	
SEED DRS	NONE	FUNGCIDE	NONE	FUNGCIDE
STRAW RT				
NONE	5.94	6.14	5.09	5.93
LITTLE	5.32	5.07	5.84	5.65
MUCH	4.88	6.13	5.72	5.36

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

TABLE	STRAW RT	SEED INF	SEED DRS	STRAW RT SEED INF
SED	0.246	0.201	0.201	0.347

TABLE	STRAW RT SEED DRS	SEED INF SEED DRS	STRAW RT SEED INF SEED DRS
SED	0.347	0.284	0.491

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

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.491	8.8

GRAIN MEAN DM% 86.0

PLOT AREA HARVESTED 0.00260

https://doi.org/10.23637/ERADOC-1-141

75/R/B/4 and 75/W/B/4

SPRING BARLEY

VARIETIES, N AND FUNGICIDES

Object: To study the yields of some of the newer varieties of barley. The effects of fungicides and a range of nitrogen rates are also studied - Rothamsted (R) Gt Knott II and Woburn (W) Far Field II.

Sponsors: R. Moffitt, J.F. Jenkyn.

Design: 2 randomised blocks of 18 plots split into 3.

Whole plot dimensions: 4.27 x 24.7.

Treatments: All combinations of:-

Whole plots:	1. Varieties and mildew control:		VARIETY
		Julia - no fungicide	JU 0
		Julia - seed dressed ethirimol	JU E
		Julia - tridemorph spray at 0.53 kg in 220 l, early with weedkiller	JU TW
		Julia - seed dressed MEB 6447	JU M
		Julia)	JU T
		Aramir)	AR T
		Hassan) sprayed tridemorph at 0.53 kg in	HA T
		Lofa Abed) 450 l at recommended stage	LA T
		Maris Mink)	MM T
	2. Rust fungicide:		FUNGCIDE
		None	NONE
		Benodanil at 1.12 kg in 450 l	BENODANI
Sub plots:	3. Nitrogen fertiliser (kg N):		N
		38	38
		75	75
		113	113

NOTE: At Woburn the planned FUNGCIDE treatment was not applied i.e. VARIETY treatments were duplicated in each block.

Basal applications:-
Great Knott II (R): Manures: (0:20:20) at 310 kg. Weedkiller: Dicamba, mecoprop and MCPA ('Tetralex Plus' at 7.0 l in 220 l).
Far Field II (W): Manures: (0:20:20) at 310 kg. Weedkiller: Ioxynil at 0.52 kg and mecoprop at 1.6 kg in 280 l.

Seed: Both sites varieties sown at 160 kg.

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Cultivations, etc.:-

Great Knott II (R): Ploughed: 4-6 Nov, 1974. Spring-tine cultivated twice: 14 Apr, 21 Apr, 1975. Rotary harrowed: 22 Apr. Seed sown: 23 Apr. N applied: 30 Apr. Weedkiller applied to all plots tridemorph treatment applied with weedkiller: 6 June. Tridemorph applied: 20 June. Benodanil applied: 21 July. Combine harvested: 22 Aug. Previous crops: Beans 1973, winter wheat 1974.

Far Field II (W): Ploughed: 10-13 Jan, 1975. Spring-tine cultivated with crumbler twice: 21 Mar, 25 Mar. Seed sown: 25 Mar. N applied: 1 Apr. Weedkiller applied to all plots, tridemorph treatment applied with weedkiller: 20 May. Tridemorph applied: 20 June. Combine harvested: 11 Aug. Previous crops: Fallow 1973, barley 1974.

NOTES: (1) Estimates of mildew (Erysiphe graminis) and other leaf diseases were made during the season.

(2) GREAT KNOTT II (R). There was evidence of a linear fertility trend across the site and yields adjusted for this trend are presented.

https://doi.org/10.23637/ERADOC-1-141

75/R/B/4 GREAT KNOTT (R)

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

FUNGCIDE	NONE	BENODANI	MEAN
VARIETY			
JU 0	3.45	3.68	3.57
JU E	3.93	3.87	3.90
JU TW	3.99	4.13	4.06
JU M	3.54	3.65	3.60
JU T	3.62	4.16	3.89
AR T	3.44	3.26	3.35
HA T	3.13	3.41	3.27
LA T	4.26	4.30	4.28
MM T	3.41	3.78	3.59
MEAN	3.64	3.80	3.72

N	38	75	113	MEAN
VARIETY				
JU 0	3.16	3.71	3.83	3.57
JU E	3.37	3.95	4.38	3.90
JU TW	3.44	4.23	4.51	4.06
JU M	3.04	3.76	3.99	3.60
JU T	3.40	3.81	4.48	3.89
AR T	2.93	3.49	3.63	3.35
HA T	2.80	3.29	3.72	3.27
LA T	3.81	4.31	4.72	4.28
MM T	2.95	3.77	4.05	3.59
MEAN	3.21	3.81	4.15	3.72

N	38	75	113	MEAN
FUNGCIDE				
NONE	3.15	3.71	4.07	3.64
BENODANI	3.27	3.92	4.22	3.80
MEAN	3.21	3.81	4.15	3.72

FUNGCIDE	NONE			BENODANI		
N	38	75	113	38	75	113
VARIETY						
JU 0	3.11	3.60	3.66	3.22	3.83	4.00
JU E	3.35	3.92	4.52	3.39	3.97	4.25
JU TW	3.23	4.15	4.60	3.65	4.30	4.43
JU M	2.91	3.79	3.92	3.17	3.72	4.06
JU T	3.18	3.56	4.12	3.61	4.05	4.83
AR T	3.11	3.55	3.65	2.74	3.43	3.60
HA T	2.85	2.99	3.56	2.75	3.59	3.88
LA T	3.84	4.29	4.64	3.77	4.33	4.80
MM T	2.74	3.52	3.97	3.16	4.03	4.14

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75/R/B/4 GREAT KNOTT (R)

GRAIN TONNES/HECTARE

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

TABLE	VARIETY	FUNGCIDE	N	VARIETY FUNGCIDE
REP	12	54	36	6
SED	0.196	0.090	0.063	0.278

TABLE	VARIETY N	FUNGCIDE N	VARIETY FUNGCIDE N
REP	4	18	2
SED	0.247	0.116	0.350

EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:

VARIETY	0.190		
FUNGCIDE		0.089	
VARIETY.FUNGCIDE			0.269

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

STRATUM	DF	SE	CV%
BLOCK.WP	16	0.270	7.3
BLOCK.WP.SP	36	0.267	7.2

GRAIN MEAN DM% 81.7

SUB PLOT AREA HARVESTED 0.00163

https://doi.org/10.23637/ERADOC-1-141

75/W/B/4 FAR FIELD II (W)

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

N VARIETY	38	75	113	MEAN
JU O	4.15	5.33	5.59	5.02
JU E	4.10	5.29	5.81	5.07
JU TW	4.09	5.57	5.82	5.16
JU M	4.30	5.36	5.75	5.14
JU T	4.13	5.43	5.80	5.12
AR T	3.95	5.43	6.12	5.16
HA T	4.07	5.37	5.86	5.10
LA T	4.25	5.66	6.64	5.52
MM T	4.64	4.91	5.99	5.18
MEAN	4.19	5.37	5.93	5.16

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

TABLE	VARIETY	N	VARIETY N
SED	0.188	0.085	0.282
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY			0.256

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.267	5.2
BLOCK.WP.SP	54	0.362	7.0

GRAIN MEAN DM% 89.3

SUB PLOT AREA HARVESTED 0.00217

https://doi.org/10.23637/ERADOC-1-141

75/R/B/5

SPRING BARLEY

NITROGEN AND FOLIAR DISEASES

Object: To study the effects of mildew and brown rust on the response to a range of nitrogen rates applied at different times - Gt. Knott II.

Sponsor: J.F. Jenkyn.

Design: Single replicate of 6 x 3 x 2 x 2.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

1. Amounts of nitrogen fertiliser (kg N):	N RATE
25	25
50	50
70	70
90	90
110	110
135	135
2. Times of applying N:	N TIME
Seedbed	SB
Top dressed	TD
Half to seedbed, half top dressed	SB/TD
3. Mildew fungicide:	MILDEW F
None	NONE
Tridemorph on 6, 24 June and 21 July	TRIDEMOR
4. Rust fungicide:	RUST F
None	NONE
Benodanil on 24 June	BENODANI

NOTE: Fungicides were applied in 340 l:-
(a) Tridemorph at 0.53 kg
(b) Benodanil at 1.12 kg with 175 ml 'Citowett'

Basal applications: Manures: (0:20:20) at 310 kg. Weedkiller: Dicamba, with mecoprop and MCPA ('Tetralex Plus' at 7.0 l in 220 l).

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Seed: Zephyr, sown at 160 kg.

Cultivations, etc.:- Ploughed: 6 Nov, 1974. Spring-tine cultivated: 14 and 21 Apr, 1975. Rotary harrowed: 22 Apr. Seed sown and harrowed in: 23 Apr. Seedbed N applied: 29 Apr. N top dressing applied: 22 May. Weedkiller applied: 6 June. Combine harvested: 22 Aug. Previous crops: Beans 1973, winter wheat 1974.

NOTES: (1) Counts were made of seedling emergence. Mildew was assessed twice and brown rust once.

(2) There was evidence of a pattern of yields across the site and the results presented have been adjusted for covariance on a dummy variate representing the comparison between plots 1 to 36 and plots 37 to 72.

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75/R/B/5

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

RUST F / MILDEW F	NONE	BENODANI	MEAN
NONE	2.92	3.15	3.03
TRIDEMOR	3.52	3.64	3.58
MEAN	3.22	3.39	3.31

N TIME / MILDEW F	SB	TD	SB/TD	MEAN
NONE	3.19	2.73	3.18	3.03
TRIDEMOR	3.82	3.38	3.54	3.58
MEAN	3.50	3.06	3.36	3.31

N TIME / RUST F	SB	TD	SB/TD	MEAN
NONE	3.46	2.90	3.30	3.22
BENODANI	3.54	3.22	3.42	3.39
MEAN	3.50	3.06	3.36	3.31

N RATE / MILDEW F	25	50	70	90	110	135	MEAN
NONE	2.63	3.03	3.00	3.17	3.19	3.19	3.03
TRIDEMOR	3.10	3.18	3.52	3.96	3.78	3.92	3.58
MEAN	2.86	3.11	3.26	3.57	3.48	3.56	3.31

N RATE / RUST F	25	50	70	90	110	135	MEAN
NONE	2.75	2.94	3.30	3.59	3.32	3.41	3.22
BENODANI	2.97	3.28	3.22	3.54	3.65	3.70	3.39
MEAN	2.86	3.11	3.26	3.57	3.48	3.56	3.31

N RATE / N TIME	25	50	70	90	110	135	MEAN
SB	2.89	3.12	3.29	3.63	4.02	4.05	3.50
TD	2.86	3.13	2.99	3.25	3.05	3.06	3.06
SB/TD	2.84	3.06	3.50	3.82	3.38	3.56	3.36
MEAN	2.86	3.11	3.26	3.57	3.48	3.56	3.31

RUST F	NONE			BENODANI		
N TIME / MILDEW F	SB	TD	SB/TD	SB	TD	SB/TD
NONE	3.08	2.54	3.13	3.29	2.93	3.23
TRIDEMOR	3.83	3.25	3.48	3.80	3.51	3.60

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75/R/B/5

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

MILDEW F	RUST F \ N RATE	25	50	70	90	110	135
NONE	NONE	2.42	2.88	2.93	3.13	3.11	3.04
	BENODANI	2.83	3.18	3.06	3.21	3.26	3.34
TRIDEMOR	NONE	3.09	2.99	3.68	4.05	3.53	3.78
	BENODANI	3.11	3.37	3.37	3.88	4.03	4.07

MILDEW F	N TIME \ N RATE	25	50	70	90	110	135
NONE	SB	2.84	3.00	2.99	3.10	3.62	3.57
	TD	2.49	3.00	2.61	2.84	2.62	2.84
	SB/TD	2.54	3.09	3.39	3.58	3.32	3.15
TRIDEMOR	SB	2.95	3.24	3.60	4.16	4.42	4.52
	TD	3.22	3.26	3.37	3.67	3.49	3.27
	SB/TD	3.13	3.04	3.60	4.06	3.44	3.97

RUST F	N TIME \ N RATE	25	50	70	90	110	135
NONE	SB	2.57	2.74	3.67	3.97	3.83	3.97
	TD	2.81	3.10	2.74	3.12	2.66	2.94
	SB/TD	2.88	2.97	3.50	3.69	3.47	3.32
BENODANI	SB	3.22	3.50	2.92	3.29	4.21	4.13
	TD	2.90	3.17	3.24	3.39	3.44	3.18
	SB/TD	2.79	3.16	3.50	3.96	3.28	3.81

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

TABLE	MILDEW F	RUST F	N TIME	N RATE
SED	0.075	0.075	0.099	0.137

TABLE	MILDEW F RUST F	MILDEW F N TIME	RUST F N TIME	MILDEW F N RATE
SED	0.107	0.135	0.135	0.192

TABLE	RUST F N RATE	N TIME N RATE	MILDEW F RUST F N TIME	MILDEW F RUST F N RATE
SED	0.191	0.239	0.189	0.268

TABLE	MILDEW F N TIME N RATE	RUST F N TIME N RATE
SED	0.335	0.331

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

STRATUM	DF	SE	CV%
WP	9	0.318	9.6

GRAIN MEAN DM% 83.5

PLOT AREA HARVESTED 0.00195

https://doi.org/10.23637/ERADOC-1-141

75/R/B/6

SPRING BARLEY

SYSTEMIC FUNGICIDE STUDY

Object: To study the effectiveness of methyl benzimidazol-2-ylcarbamate (MBC) and several precursors of MBC and to relate chemical measurements of persistence, movement and conversion to MBC to field performance - Gt. Knott II.

Sponsors: I.J. Graham-Bryce, P.H. Nicholls.

Design: 4 randomised blocks of 6 plots.

Whole plot dimensions: 2.41 x 9.14.

Treatments: Fungicidal seed dressings (at 0.5 kg/ha):-

	FUNGCIDE
None	NONE
Benomyl	BENOMYL
Ethirimol	ETHIRIMO
MBC	MBC
NF 48	NF 48
Thiophanate methyl	THIOPHAN

Basal applications: Manures: (20:14:14) at 440 kg. Weedkiller: Dicamba with mecoprop and MCPA ('Tetralex Plus' at 7.0 l in 220 l).

Seed: Sultan, infected with smut, sown at 160 kg.

Cultivations, etc.:- Ploughed: 6 Nov, 1974. Spring-tine cultivated: 14 and 21 Apr, 1975. Rotary cultivated and seed sown: 23 Apr. NPK applied: 25 Apr. Weedkiller applied: 6 June. Combine harvested: 26 Aug. Previous crops: Beans 1973, winter wheat 1974.

NOTE: Counts of mildew were made three times, and of smut and eyespot once.

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75/R/B/6

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

FUNGCIDE	NONE	BENOMYL	ETHIRIMO	MBC	NF 48	THIOPHAN	MEAN
	2.82	2.99	2.71	2.96	2.99	2.59	2.84

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

TABLE	FUNGCIDE
SED	0.204

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

STRATUM	DF	SE	CV%
BLOCK.WP	15	0.288	10.1

GRAIN MEAN DM% 88.0

PLOT AREA HARVESTED 0.00151

https://doi.org/10.23637/ERADOC-1-141

75/R/B/7

SPRING BARLEY

CONTROL OF CEREAL APHIDS AND BYDV

Object: To study the effects of controlling cereal aphids at different times on the incidence of barley yellow dwarf virus (BYDV) and on the yield of barley - Highfield IV.

Sponsor: R.T. Plumb.

Design: 4 blocks of 8 plots, randomisation restricted.

Whole plot dimensions: 6.40 x 24.4

Treatments: All combinations of:-

1. Phorate, as granules to seedbed (kg a.i.):	PHORATE
None	0.0
5.0	5.0
2. Menazon spray early (13 June) (1 'Saphi-Col'):	MENAZON(1)
None	0.0
0.7	0.7
3. Menazon spray late (9 July) (1 'Saphi-Col'):	MENAZON(2)
None	0.0
0.7	0.7

NOTE: 'Saphi-Col' applied in 450 l.

Basal applications: Manures: (20:14:14) at 380 kg, combine drilled.

Seed: Julia, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:- Ploughed: 3 Dec, 1974. Phorate applied, spring-tine cultivated twice and seed sown: 4 Mar, 1975. Combine harvested: 6 Aug. Previous crops: Barley 1973, winter oats 1974.

NOTES: (1) Emergence counts were made on 25 April.
(2) Aphid counts were made on three occasions and virus counts on two occasions.
(3) 1000 grain weights were determined.

https://doi.org/10.23637/ERADOC-1-141

75/R/B/7

*** TABLES OF MEANS ***

GRAIN TONNES/HECTARE

MENAZON(1) PHORATE	0.0	0.7	MEAN
0.0	4.58	4.20	4.39
5.0	4.17	4.35	4.26
MEAN	4.38	4.28	4.33

MENAZON(2) PHORATE	0.0	0.7	MEAN
0.0	4.41	4.37	4.39
5.0	4.16	4.36	4.26
MEAN	4.28	4.37	4.33

MENAZON(2) MENAZON(1)	0.0	0.7	MEAN
0.0	4.30	4.45	4.38
0.7	4.27	4.28	4.28
MEAN	4.28	4.37	4.33

MENAZON(1)	0.0		0.7	
MENAZON(2) PHORATE	0.0	0.7	0.0	0.7
0.0	4.68	4.48	4.14	4.26
5.0	3.92	4.42	4.39	4.30

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

TABLE	PHORATE	MENAZON(1)	MENAZON(2)	PHORATE MENAZON(1)
SED	0.127	0.127	0.127	0.180

TABLE	PHORATE MENAZON(2)	MENAZON(1) MENAZON(2)	PHORATE MENAZON(1) MENAZON(2)
SED	0.180	0.180	0.255

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

STRATUM	DF	SE	CV%
BLOCK.WP	21	0.360	8.3

GRAIN MEAN DM% 86.4

PLOT AREA HARVESTED 0.00390

https://doi.org/10.23637/ERADOC-1-141

75/R/B/8

SPRING BARLEY

EFFECTS OF MILDEW SOURCES ON DISEASE CONTROL

Object: To study the effects of nearby sources of mildew on control by tridemorph sprays applied at a range of times - Little Hoos.

Sponsors: J.F. Jenkyn, A.Bainbridge.

Design: 3 randomised blocks of 2 plots split into 7.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:.

Whole plots: 1. Mildew source: MILDSRCE

None (seed treated ethirimol, crop sprayed tridemorph)	NONE
Much (no mildew control)	MUCH

Sub plots: 2. Times of applying tridemorph (single sprays applied at about 5-day intervals at 0.53 kg in 340 l): TRIDEMOR

1	22 May	1
2	29 May	2
3	4 June	3
4	9 June	4
5	13 June	5
6	16 June	6
7	20 June	7

NOTE: The whole plot treatments were applied to a strip of crop 10 m wide at the ends of all sub plots. There were no discards between sub plots (0.6 m fallow paths only). The sides of sets of seven sub plots were separated by strips of crop 19 m wide, seed treated ethirimol, crop sprayed tridemorph at 0.53 kg in 450 l on 20 June.

Basal applications: Manures: (20:14:14) at 440 kg. Weedkillers: Paraquat at 0.42 kg ion in 220 l, dicamba with mecoprop and MCPA ('Tetralex Plus' at 7.0 l in 220 l).

Seed: Julia sown at 160 kg.

Cultivations, etc.:- Ploughed: 14 Nov, 1974. Paraquat applied: 27 Feb, 1975. Spring-tine cultivated: 1, 2, and 25 Mar. Seed sown: sub plots and ends of plots 11-17: 14 Apr, sowing completed and all plots spring-tine cultivated: 21 Apr. Weedkiller applied: 6 June. Combine harvested: 22 Aug. Previous crops: Potatoes 1973, winter wheat 1974.

NOTE: Mildew was assessed on one occasion.

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GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

TRIDEMOR / MILDSRCE	1	2	3	4	5	6	7	MEAN
NONE	5.63	5.33	5.53	5.36	5.29	5.37	5.23	5.39
MUCH	5.47	5.48	5.35	5.18	4.70	5.11	4.81	5.16
MEAN	5.55	5.41	5.44	5.27	5.00	5.24	5.02	5.27

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

TABLE	TRIDEMOR	MILDSRCE TRIDEMOR
SED	0.146	
ONLY WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: MILDSRCE		0.206

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	24	0.253	4.8

GRAIN MEAN DM% 84.5

SUB PLOT AREA HARVESTED 0.00195

https://doi.org/10.23637/ERADOC-1-141

75/R/B/9

SPRING BARLEY

MILDEW CONTROL IN SYSTEMATIC AND BALANCED DESIGNS

Object: To study the effects of tridemorph sprays, applied at different times, in systematic and balanced designs and to assess the magnitude of interference between plots - Little Hoos.

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

Designs: Systematic: 4 'blocks' of 6 plots.
Serially balanced: 9 'blocks' of 4 plots (+ 2 flanking plots).

Whole plot dimensions: 4.27 x 7.62.

Treatments: To systematic design: Times of applying tridemorph: TRIDEMOR

None	0
Once, on 22 May	1
Once, on 4 June	2
Once, on 13 June	3
Repeated three times at above dates	R

Plots arranged in linear sequence:

R0R123 R0R321 123R0R 321R0R

Serially balanced design:

Fungicide sprays as above but omitting level 3.

These were applied to 38 plots in one line on the field in an order such that each of the 36 possible sets of 3 adjacent treatments occurred exactly once (but omitting sets with the same treatment on 2 successive plots). The effects of treatments to neighbouring plots (lefthand neighbour - LHN, righthand neighbour - RHN) are estimated in the analysis. (See Dyke and Shelley, Journal of Agricultural Science, Cambridge, in the press.)

In this experiment, 'left' was north, 'right' was south.

The analysis presented assumes a Fourier curve with 4 terms, 2 sine and 2 cosine, to represent positional variation.

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NOTES: (1) The surrounds of both designs to a distance of 17 m were sown with seed dressed with organomercury and ethirimol, and were sprayed with tridemorph at 1.6 kg in 450 l on 20 June.
(2) Tridemorph was applied at 0.53 kg in 340 l on each occasion to plots.

Basal applications: Manures: (20:14:14) at 440 kg combine drilled. Weedkillers: Paraquat at 0.42 kg ion in 220 l. Dicamba with mecoprop and MCPA ('Banlene Plus' at 5.6 l in 220 l).

Seed: Julia, dressed with organomercury only, sown at 160 kg.

Cultivations, etc.:- Ploughed: 14 Nov, 1974. Paraquat applied: 27 Feb, 1975. Spring-tine cultivated: 1, 2 and 25 Mar. Sown: 26 Mar. 'Banlene Plus' applied: 20 May. Combine harvested: 6 Aug. Previous crops: Potatoes 1973, winter wheat 1974.

NOTE: Mildew was assessed on 10 June and 7 July.

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75/R/B/9

BARLEY

SYSTEMATIC DESIGN

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

TRIDEMOR	-	1	2	3	R	MEAN
	5.50	5.82	5.90	5.82	6.01	5.84

GRAIN MEAN DM% 87.8

SERIALLY BALANCED DESIGN

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

GRAND MEAN 5.80

TRIDEMOR	-	1	2	R
	5.31	5.87	6.03	6.00

LHN TRIDEMOR	-	1	2	R
-		5.35	5.38	5.20
1	6.00		5.75	5.85
2	6.05	6.20		5.83
R	6.16	5.71	6.14	

RHN TRIDEMOR	-	1	2	R
-		5.34	5.31	5.29
1	5.77		6.07	5.77
2	6.02	6.00		6.06
R	5.83	6.13	6.05	

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

TABLE	TRIDEMOR	TRIDEMOR LHN	TRIDEMOR RHN
SED	0.070	0.173	0.179

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

STRATUM	DF	SE	CV%
WP	12	0.145	2.5

GRAIN MEAN DM% 88.1

PLOT AREA HARVESTED 0.00163

https://doi.org/10.23637/ERADOC-1-141

75/R/B/11

SPRING BARLEY

FUNGICIDES AND GRAIN MICROFLORA

Object: To study the effects of a broad spectrum fungicide, applied at a range of times, on barley crops with or without additional specific fungicides against rust and mildew. Effects on yield, quality and grain-surface microorganisms before harvest and in storage are studied - Long Hoos IV 3.

Sponsor: R.A. Hill.

Design: 2 blocks of 16 plots, randomisation restricted.

Whole plot dimensions: 2.41 x 6.10.

Treatments: All combinations of:-

1. Specific fungicides for foliar pathogen control:	SPECFUNG
None	NONE
Ethirimol seed dressing + tridemorph spray at 0.53 kg in 340 l on 10 May	ALL
2. Benomyl on 16 July:	BENOMYL(1)
None	NONE
Sprayed	SPRAYED
3. Benomyl on 28 July:	BENOMYL(2)
None	NONE
Sprayed	SPRAYED
4. Benomyl on 11 Aug:	BENOMYL(3)
None	NONE
Sprayed	SPRAYED

NOTE: Benomyl was applied at 1.12 kg in 340 l.

Basal applications: Weedkillers: Dicamba with mecoprop and MCPA ('Tetralex Plus' at 7.0 l in 340 l).

Seed: Julia, sown at 160 kg.

https://doi.org/10.23637/ERADOC-1-141

Cultivations, etc.:- Ploughed: 16 Jan, 1975. Spring-tine cultivated: 26 Mar. Spring-tine cultivated and seed sown: 21 Apr. Weedkiller applied: 6 June. Combine harvested: 22 Aug. Previous crops: Barley 1973, potatoes 1974.

NOTES: (1) Leaf microflora were assessed soon after each application of benomyl.
(2) Microflora, 1000 grain weight and germination were assessed on samples of grain taken at harvest.

GRAIN TONNES/HECTARE

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

STRATUM	DF	SE	CV%
BLOCK.WP	15	0.523	16.2

GRAIN MEAN DM% 81.0

PLOT AREA HARVESTED 0.00075

https://doi.org/10.23637/ERADOC-1-141

75/R/B/11

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

BENOMYL(1) SPECFUNG	NONE	SPRAYED	MEAN
NONE	3.29	3.12	3.20
ALL	3.34	3.15	3.25
MEAN	3.31	3.14	3.23

BENOMYL(2) SPECFUNG	NONE	SPRAYED	MEAN
NONE	3.25	3.16	3.20
ALL	3.14	3.35	3.25
MEAN	3.20	3.25	3.23

BENOMYL(2) BENOMYL(1)	NONE	SPRAYED	MEAN
NONE	3.25	3.38	3.31
SPRAYED	3.14	3.13	3.14
MEAN	3.20	3.25	3.23

BENOMYL(3) SPECFUNG	NONE	SPRAYED	MEAN
NONE	3.30	3.11	3.20
ALL	3.30	3.19	3.25
MEAN	3.30	3.15	3.23

BENOMYL(3) BENOMYL(1)	NONE	SPRAYED	MEAN
NONE	3.34	3.29	3.31
SPRAYED	3.26	3.01	3.14
MEAN	3.30	3.15	3.23

BENOMYL(3) BENOMYL(2)	NONE	SPRAYED	MEAN
NONE	3.27	3.12	3.20
SPRAYED	3.33	3.17	3.25
MEAN	3.30	3.15	3.23

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GRAIN TONNES/HECTARE

BENOMYL(1)	NONE		SPRAYED	
BENOMYL(2)	NONE	SPRAYED	NONE	SPRAYED
SPECFUNG				
NONE	3.35	3.23	3.16	3.09
ALL	3.16	3.52	3.13	3.18

BENOMYL(1)	NONE		SPRAYED	
BENOMYL(3)	NONE	SPRAYED	NONE	SPRAYED
SPECFUNG				
NONE	3.33	3.24	3.27	2.97
ALL	3.34	3.34	3.26	3.05

BENOMYL(2)	NONE		SPRAYED	
BENOMYL(3)	NONE	SPRAYED	NONE	SPRAYED
SPECFUNG				
NONE	3.40	3.10	3.20	3.12
ALL	3.13	3.15	3.47	3.23

BENOMYL(2)	NONE		SPRAYED	
BENOMYL(3)	NONE	SPRAYED	NONE	SPRAYED
BENOMYL(1)				
NONE	3.29	3.21	3.38	3.37
SPRAYED	3.24	3.04	3.29	2.98

	BENOMYL(2)	NONE		SPRAYED	
	BENOMYL(3)	NONE	SPRAYED	NONE	SPRAYED
SPECFUNG	BENOMYL(1)				
NONE	NONE	3.49	3.20	3.17	3.29
	SPRAYED	3.32	2.99	3.22	2.95
ALL	NONE	3.10	3.21	3.58	3.46
	SPRAYED	3.16	3.09	3.35	3.00

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

TABLE	SPECFUNG	BENOMYL(1)	BENOMYL(2)	BENOMYL(3)
SED	0.185	0.185	0.185	0.185

TABLE	SPECFUNG BENOMYL(1)	SPECFUNG BENOMYL(2)	BENOMYL(1) BENOMYL(2)	SPECFUNG BENOMYL(3)
SED	0.261	0.261	0.261	0.261

TABLE	BENOMYL(1) BENOMYL(3)	BENOMYL(2) BENOMYL(3)	SPECFUNG BENOMYL(1) BENOMYL(2)	SPECFUNG BENOMYL(1) BENOMYL(3)
SED	0.261	0.261	0.370	0.370

TABLE	SPECFUNG BENOMYL(2) BENOMYL(3)	BENOMYL(1) BENOMYL(2) BENOMYL(3)	SPECFUNG BENOMYL(1) BENOMYL(2) BENOMYL(3)
REP	4	4	2
SED	0.370	0.370	0.523

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75/S/B/1

SPRING BARLEY

VARIETIES, N AND FUNGICIDES

Object: To study the effects of rates, times and forms of nitrogen and of fungicides on the incidence of foliar diseases and yields of two varieties of barley - Saxmundham, Grove Plot.

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

Design: Single replicate of 32 plots split into 2.

Whole plot dimensions: 2.43 x 12.2.

Treatments: All combinations of:-

Whole plots: 1. Varieties:	VARIETY
Julia	JULIA
Wing	WING
2. Solid nitrogen fertiliser (kg N):	S N
50	50
100	100
3. Time of applying solid nitrogen fertiliser:	S N TIME
Seedbed on 28 Apr	SEEDBED
Top dressed on 29 May	TOPDRESS
4. Liquid nitrogen fertiliser (kg N):	L N
None	0
50 (half on 26 June, half on 17 July)	50
5. Mildew control:	MILD CON
None	NONE
Seed dressed ethirimol crop sprayed tridemorph at 0.53 kg in 280 l on 26 June	ETH/TRID

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Sub plots: 6. Rust control:	RUST CON
None	NONE
Crop sprayed benodanil at 1.12 kg in 280 l on 26 June, 17 July	BENODANI

NOTE: 'Nitro-Chalk' was used as solid fertiliser 'Agsol N26' as liquid fertiliser in 75 litres.

Basal applications: Manures: (0:20:20) at 310 kg. Weedkiller: Dichlorprop plus MCPA ('Mephetol Plus' at 5.6 l in 340 l),

Seed: Sown at 190 kg.

Cultivations, etc.:- Ploughed: 15 Oct, 1974. Seed sown: 28 Apr, 1975. Weedkiller applied: 11 June. Combine harvested: 20 Aug. Previous crops: Barley 1973 and 1974.

NOTE: Mildew (Erysiphe graminis), brown rust (Puccinia hordei) and yellow rust (P. striiformis) were assessed on 29 July.

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BARLEY

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

S N	50	100	MEAN
VARIETY			
JULIA	3.33	3.66	3.49
WING	3.60	3.86	3.73
MEAN	3.46	3.76	3.61

S N TIME	SEEDBED	TOPDRESS	MEAN
VARIETY			
JULIA	3.70	3.28	3.49
WING	4.09	3.37	3.73
MEAN	3.89	3.33	3.61

S N TIME	SEEDBED	TOPDRESS	MEAN
S N			
50	3.82	3.11	3.46
100	3.97	3.54	3.76
MEAN	3.89	3.33	3.61

L N	0	50	MEAN
VARIETY			
JULIA	3.38	3.60	3.49
WING	3.61	3.84	3.73
MEAN	3.50	3.72	3.61

L N	0	50	MEAN
S N			
50	3.32	3.61	3.46
100	3.68	3.84	3.76
MEAN	3.50	3.72	3.61

L N	0	50	MEAN
S N TIME			
SEEDBED	3.85	3.94	3.89
TOPDRESS	3.15	3.50	3.33
MEAN	3.50	3.72	3.61

MILD CON	NONE	ETH/TRID	MEAN
VARIETY			
JULIA	3.31	3.67	3.49
WING	3.65	3.81	3.73
MEAN	3.48	3.74	3.61

MILD CON	NONE	ETH/TRID	MEAN
S N			
50	3.31	3.61	3.46
100	3.65	3.86	3.76
MEAN	3.48	3.74	3.61

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BARLEY

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

MILD CON S N TIME	NONE	ETH/TRID	MEAN
SEEDBED	3.81	3.98	3.89
TOPDRESS	3.15	3.50	3.33
MEAN	3.48	3.74	3.61

MILD CON L N	NONE	ETH/TRID	MEAN
0	3.39	3.61	3.50
50	3.57	3.87	3.72
MEAN	3.48	3.74	3.61

RUST CON VARIETY	NONE	BENODANI	MEAN
JULIA	3.37	3.61	3.49
WING	3.69	3.77	3.73
MEAN	3.53	3.69	3.61

RUST CON S N	NONE	BENODANI	MEAN
50	3.34	3.59	3.46
100	3.72	3.79	3.76
MEAN	3.53	3.69	3.61

RUST CON S N TIME	NONE	BENODANI	MEAN
SEEDBED	3.73	4.06	3.89
TOPDRESS	3.33	3.32	3.33
MEAN	3.53	3.69	3.61

RUST CON L N	NONE	BENODANI	MEAN
0	3.47	3.53	3.50
50	3.59	3.85	3.72
MEAN	3.53	3.69	3.61

RUST CON MILD CON	NONE	BENODANI	MEAN
NONE	3.46	3.51	3.48
ETH/TRID	3.60	3.87	3.74
MEAN	3.53	3.69	3.61

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75/S/B/1

GRAIN TONNES/HECTARE

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

TABLE	VARIETY	S N	S N TIME	L N
SED	0.102	0.102	0.102	0.102

TABLE	MILD CON	RUST CON	VARIETY S N	VARIETY S N TIME
SED	0.102	0.122	0.144	0.144

TABLE	S N S N TIME	VARIETY L N	S N L N	S N TIME L N
SED	0.144	0.144	0.144	0.144

TABLE	VARIETY MILD CON	S N MILD CON	S N TIME MILD CON	L N MILD CON
SED	0.144	0.144	0.144	0.144

TABLE	VARIETY RUST CON	S N RUST CON	S N TIME RUST CON	L N RUST CON
SED	0.159	0.159	0.159	0.159

EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:

VARIETY	0.172			
S N		0.172		
S N TIME			0.172	
L N				0.172

TABLE	MILD CON RUST CON
REP	16
SED	0.159

EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:

MILD CON	0.172

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

STRATUM	DF	SE	CV%
WP	6	0.289	8.0
WP.SP	16	0.487	13.5

GRAIN MEAN DM% 82.2

SUB PLOT AREA HARVESTED 0.00073

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