ROTHAMSTED RESEARCH

Yields of the Field Experiments 1978

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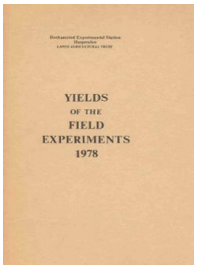

Barley

Rothamsted Research

Rothamsted Research (1979) *Barley ;* Yields Of The Field Experiments 1978, pp 379 - 405 **- DOI: https://doi.org/10.23637/ERADOC-1-30**

78/R/B/2

WINTER BARLEY

FACTORS AFFECTING YIELD AND DISEASE CONTROL

Object: To study the effects and interactions of sowing date, seed rate, timing of mildew control and spring nitrogen on the incidence of mildew and on yield of winter barley - Scout.

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

Design: 3 x 2 x 2 x 2 x 2 in 2 blocks of 24 plots with confounding.

Whole plot dimensions: 2.13 x 6.10.

Treatments: All combinations of:-

1.	S DATE T	Sowing date and autumn tridemorph:
	6 OCT+T	6 October, tridemorph spray in autumn on 18 Nov, 1977
	6 OCT 0	6 October, no tridemorph spray in autumn
	2 NOV 0	2 November, no tridemorph spray in autumn
2.	SEEDRATE	Seed rates (kg):
	78	
	156	
3.	TRIDEMOR(1)	Tridemorph in early spring:
	NONE	None
	SPRAYED	Sprayed (3 May, 1978)
4.	TRIDEMOR(2)	Tridemorph in late spring:
	NONE	None
	SPRAYED	Sprayed (26 May, 1978)
5.	N TIME	Time of applying nitrogen (at 75 kg):
	6 MAR	6 March
	25 APR	25 April

NOTES: (1) Tridemorph was applied at 0.53 kg in 340 l.
(2) The experiment had a surround of 18.3 m sown to winter barley, variety Athene, on 6 October, 1977 and each plot was separated from its neighbours by sidelands of 2.13 m and internal headlands of 9.14 m sown to Athene on this date.

Basal applications: Manures: (10:24:24) at 250 kg, combine drilled. Weedkiller: Mecoprop at 3.1 kg in 220 l.

Seed: Hoppel.

Cultivations, etc.:- Straw burned: 11 Sept, 1977. Chisel ploughed twice: 16 Sept and 19 Sept. Rotary harrowed: 28 Sept. Weedkiller applied: 4 May, 1978. Combine harvested: 11 Aug. Previous crops: Wheat 1976, Barley 1977.

NOTE: Emergence counts were made for both sowings. Mildew was assessed three times during the season. Numbers of fertile tillers, grains per ear and thousand grain weights were assessed.

https://doi.org/10.23637/ERADOC-1-30

78/R/B/2

GRAIN TONNES/HECTARE

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

SEEDRATE S DATE T	78	156	MEAN
6 OCT+T	5.78	5.48	5.63
6 OCT 0	5.49	5.48	5.49
2 NOV 0	3.60	3.60	3.60
MEAN	4.96	4.85	4.91

TRIDEMOR(1) S DATE T	NONE	SPRAYED	MEAN
6 OCT+T	5.45	5.81	5.63
6 OCT 0	5.28	5.70	5.49
2 NOV 0	3.63	3.57	3.60
MEAN	4.79	5.02	4.91

TRIDEMOR(1) SEEDRATE	NONE	SPRAYED	MEAN
78	4.73	5.18	4.96
156	4.84	4.86	4.85
MEAN	4.79	5.02	4.91

TRIDEMOR(2) S DATE T	NONE	SPRAYED	MEAN
6 OCT+T	5.55	5.70	5.63
6 OCT 0	5.24	5.74	5.49
2 NOV 0	3.47	3.72	3.60
MEAN	4.75	5.06	4.91

TRIDEMOR(2) SEEDRATE	NONE	SPRAYED	MEAN
78	5.22	4.70	4.96
156	4.29	5.41	4.85
MEAN	4.75	5.06	4.91

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78/R/B/2

GRAIN TONNES/HECTARE

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

TRIDEMOR(2) / TRIDEMOR(1)	NONE	SPRAYED	MEAN
NONE	4.44	5.13	4.79
SPRAYED	5.07	4.98	5.02
MEAN	4.75	5.06	4.91

N TIME / S DATE T	6 MAR	25 APR	MEAN
6 OCT+T	5.93	5.32	5.63
6 OCT 0	5.61	5.37	5.49
2 NOV 0	3.11	4.09	3.60
MEAN	4.88	4.93	4.91

N TIME / SEEDRATE	6 MAR	25 APR	MEAN
78	4.81	5.10	4.96
156	4.95	4.75	4.85
MEAN	4.88	4.93	4.91

N TIME / TRIDEMOR(1)	6 MAR	25 APR	MEAN
NONE	4.80	4.78	4.79
SPRAYED	4.97	5.08	5.02
MEAN	4.88	4.93	4.91

N TIME / TRIDEMOR(2)	6 MAR	25 APR	MEAN
NONE	4.82	4.68	4.75
SPRAYED	4.94	5.17	5.06
MEAN	4.88	4.93	4.91

SEEDRATE	78		156	
TRIDEMOR(1) / S DATE T	NONE	SPRAYED	NONE	SPRAYED
6 OCT+T	5.63	5.92	5.27	5.69
6 OCT 0	5.11	5.88	5.45	5.52
2 NOV 0	3.46	3.74	3.81	3.39

SEEDRATE	78		156	
TRIDEMOR(2) / S DATE T	NONE	SPRAYED	NONE	SPRAYED
6 OCT+T	6.29	5.27	4.81	6.14
6 OCT 0	5.57	5.42	4.91	6.06
2 NOV 0	3.79	3.41	3.16	4.04

TRIDEMOR(1)	NONE		SPRAYED	
TRIDEMOR(2) / S DATE T	NONE	SPRAYED	NONE	SPRAYED
6 OCT+T	5.17	5.72	5.93	5.68
6 OCT 0	4.83	5.74	5.65	5.74
2 NOV 0	3.33	3.94	3.62	3.51

https://doi.org/10.23637/ERADOC-1-30

78/R/B/2

GRAIN TONNES/HECTARE

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

TRIDEMOR(1)	NONE		SPRAYED	
TRIDEMOR(2)	NONE	SPRAYED	NONE	SPRAYED
SEEDRATE				
78	4.86	4.60	5.57	4.80
156	4.02	5.67	4.57	5.16

SEEDRATE	78		156	
N TIME	6 MAR	25 APR	6 MAR	25 APR
S DATE T				
6 OCT+T	5.95	5.60	5.91	5.05
6 OCT 0	5.49	5.50	5.73	5.24
2 NOV 0	3.00	4.20	3.21	3.98

TRIDEMOR(1)	NONE		SPRAYED	
N TIME	6 MAR	25 APR	6 MAR	25 APR
S DATE T				
6 OCT+T	5.95	4.95	5.91	5.70
6 OCT 0	5.18	5.38	6.04	5.35
2 NOV 0	3.27	4.00	2.94	4.19

TRIDEMOR(1)	NONE		SPRAYED	
N TIME	6 MAR	25 APR	6 MAR	25 APR
SEEDRATE				
78	4.71	4.75	4.92	5.45
156	4.89	4.80	5.02	4.71

TRIDEMOR(2)	NONE		SPRAYED	
N TIME	6 MAR	25 APR	6 MAR	25 APR
S DATE T				
6 OCT+T	6.05	5.05	5.81	5.60
6 OCT 0	5.09	5.39	6.13	5.35
2 NOV 0	3.33	3.61	2.88	4.57

TRIDEMOR(2)	NONE		SPRAYED	
N TIME	6 MAR	25 APR	6 MAR	25 APR
SEEDRATE				
78	5.05	5.38	4.58	4.82
156	4.60	3.99	5.30	5.52

TRIDEMOR(2)	NONE		SPRAYED	
N TIME	6 MAR	25 APR	6 MAR	25 APR
TRIDEMOR(1)				
NONE	4.55	4.34	5.05	5.22
SPRAYED	5.10	5.03	4.83	5.13

https://doi.org/10.23637/ERADOC-1-30

78/R/B/2

GRAIN TONNES/HECTARE

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

TABLE	S DATE T	SEEDRATE	TRIDEMOR(1)	TRIDEMOR(2)
SED	0.188	0.154	0.154	0.154

TABLE	N TIME	S DATE T SEEDRATE	S DATE T TRIDEMOR(1)	SEEDRATE TRIDEMOR(1)
SED	0.154	0.267	0.267	0.218

TABLE	S DATE T TRIDEMOR(2)	SEEDRATE TRIDEMOR(2)	TRIDEMOR(1) TRIDEMOR(2)	S DATE T N TIME
SED	0.267	0.218	0.218	0.267

TABLE	SEEDRATE N TIME	TRIDEMOR(1) N TIME	TRIDEMOR(2) N TIME	S DATE T SEEDRATE TRIDEMOR(1)
SED	0.218	0.218	0.218	0.377

TABLE	S DATE T SEEDRATE TRIDEMOR(2)	S DATE T TRIDEMOR(1) TRIDEMOR(2)	SEEDRATE TRIDEMOR(1) TRIDEMOR(2)	S DATE T SEEDRATE N TIME
SED	0.377	0.377	0.308	0.377

TABLE	S DATE T TRIDEMOR(1) N TIME	SEEDRATE TRIDEMOR(1) N TIME	S DATE T TRIDEMOR(2) N TIME	SEEDRATE TRIDEMOR(2) N TIME
SED	0.377	0.308	0.377	0.308

TABLE	TRIDEMOR(1) TRIDEMOR(2) N TIME
SED	0.308

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.533	10.9

GRAIN MEAN DM% 84.9

PLOT AREA HARVESTED 0.00130

https://doi.org/10.23637/ERADOC-1-30

78/R/B/3

WINTER BARLEY

SOWING DATES, VERNALIZATION AND MILDEW

Object: To study the effects of sowing date and vernalization on the incidence of mildew and on the yield of winter barley - Garden Plot 1.

Sponsors: J.F. Jenkyn, M.E. Finney, N. White.

Design: 3 randomised blocks of 8 plots.

Whole plot dimensions: 1.83 x 3.05.

Treatments: All combinations of:-

1. S DATE T — Sowing date and autumn tridemorph:

13 OCT+T	13 October, tridemorph spray at 0.53 kg in 340 l on 18 Nov, 1977
13 OCT 0	13 October, no tridemorph
15 NOV 0	15 November, no tridemorph
7 APR 0	7 April, no tridemorph

2. SD TREAT — Seed treatment before sowing

NONE	None
VERN	Seed vernalized for six weeks before sowing

NOTES: (1) For SD TREAT VERN the seed was placed in a cold room kept at 0° to 1°C and seed was maintained at 80% moisture content by the weekly addition of weighed quantities of water.
(2) Yields were not recorded from S DATE T 15 NOV 0 because of severe bird damage prior to harvest.

Basal applications: Manures: (0:14:28) at 720 kg. N at 100 kg (as 'Nitro-Chalk 25').

Seed: Astrix, sown by hand at 150 kg.

Cultivations, etc.:- Ploughed: 23 Aug,1977. N applied: 27 Apr, 1978. Harvested: 14 Aug and 15 Sept.

NOTE: Mildew was observed throughout the season. Observations were also made of the number of leaves on the main shoot and first tiller, the size of the leaves, and the proportion of the leaves which had been killed by mildew.

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78/R/B/3

GRAIN TONNES/HECTARE

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

SD TREAT S DATE T	NONE	VERN	MEAN
13 OCT+T	4.60	5.47	5.03
13 OCT 0	5.41	4.49	4.95
7 APR 0	4.96	5.21	5.08
MEAN	4.99	5.05	5.02

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

TABLE	S DATE T	SD TREAT	S DATE T SD TREAT
SED	0.488	0.399	0.691

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.846	16.8

GRAIN MEAN DM% 79.4

PLOT AREA HARVESTED 0.00038

https://doi.org/10.23637/ERADOC-1-30

78/R/B/4 and 78/W/B/4

SPRING BARLEY

VARIETIES AND N

Object: To study the yields of some of the newer varieties of barley; a growth regulator and three rates of nitrogen are also tested - Rothamsted (R) Gt. Knott III and Woburn (W) Lansome III.

Sponsor: R. Moffitt.

Design: 2 randomised blocks of 2 whole plots split into 10 sub plots systematically split ito 3 sub sub plots.

Whole plot dimensions: 42.7 x 20.1.

Treatments: All combinations of:-

Whole plots

1. GRTH REG — Growth regulator:

NONE	None
MEP+ETH	Mepiquat chloride + ethephon ('BAS 09800W' at 2.0 l in 280 l)

Sub plots

2. VARIETY — Varieties:

ARAMIR
ATHOS
GEORGIE
JULIA
JUPITER
LOFAABED
MALAABED
MINAK
PORTHOS
PRINTA

Sub sub plots

3. N — Nitrogen fertiliser (kg N):

38
75
113

Basal applications:
Gt. Knott III (R): Manures: (0:20:20) at 310 kg, combine drilled. Weedkiller: Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg in 220 l). Fungicide: Tridemorph at 0.53 kg applied with weedkiller.

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78/R/B/4 and 78/W/B/4

Lansome III (W): Manures: (0:20:20) at 300 kg, combine drilled. Weedkiller. Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg in 280 l). Fungicide: Tridemorph at 0.53 kg with weedkiller.

Seed: Gt. Knott III (R): Varieties sown at 160 kg.
Lansome III (W): Varieties sown at 160 kg.

Cultivations, etc.:-
Gt. Knott III (R): Ploughed: 25 Oct, 1977. Spring-tine cultivated: 11 Mar, 1978. Seed sown: 6 Apr. Test N applied: 17 May. Weedkiller and fungicide applied: 22 May. Growth regulator applied: 6 June. Combine harvested: 9 Sept. Previous crops: Wheat 1976, 1977.
Lansome III (W): Ploughed: 18 Nov, 1977. Spring-tine cultivated: 9 Mar, 1978. Test N applied, spring-tine cultivated with crumbler attached, seed sown: 29 Mar. Weedkiller and fungicide applied: 17 May. Growth regulator applied: 6 June. Combine harvested: 22 Aug. Previous crops: Potatoes 1976, barley 1977.

78/R/B/4 GT.KNOTT III (R)

GRAIN TONNES/HECTARE

***** TABLE OF MEANS *****

GRTH REG	NONE	MEP+ETH	MEAN
VARIETY			
ARAMIR	6.43	6.36	6.39
ATHOS	6.52	6.47	6.49
GEORGIE	6.52	6.40	6.46
JULIA	5.68	5.79	5.73
JUPITER	6.11	6.41	6.26
LOFAABED	5.96	6.37	6.16
MALAABED	5.92	6.41	6.17
MINAK	6.14	5.83	5.99
PORTHOS	6.26	6.43	6.35
PRINTA	5.47	5.76	5.62
MEAN	6.10	6.22	6.16

N	38	75	113	MEAN
VARIETY				
ARAMIR	6.05	6.94	6.19	6.39
ATHOS	5.91	6.70	6.88	6.49
GEORGIE	5.94	6.77	6.67	6.46
JULIA	5.66	5.65	5.88	5.73
JUPITER	5.94	6.44	6.39	6.26
LOFAABED	5.86	6.45	6.18	6.16
MALAABED	5.88	6.38	6.23	6.17
MINAK	6.04	6.08	5.84	5.99
PORTHOS	5.93	6.60	6.51	6.35
PRINTA	5.37	5.65	5.82	5.62
MEAN	5.86	6.37	6.26	6.16

N	38	75	113	MEAN
GRTH REG				
NONE	5.70	6.28	6.32	6.10
MEP+ETH	6.01	6.45	6.20	6.22
MEAN	5.86	6.37	6.26	6.16

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78/R/B/4 GT.KNOTT III (R)

GRAIN TONNES/HECTARE

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

GRTH REG	VARIETY	N	38	75	113
NONE	ARAMIR		5.97	7.11	6.21
	ATHOS		5.93	6.69	6.95
	GEORGIE		5.74	6.88	6.94
	JULIA		5.63	5.55	5.85
	JUPITER		5.61	6.36	6.35
	LOFAABED		5.67	6.22	6.01
	MALAABED		5.55	5.77	6.45
	MINAK		6.04	6.26	6.13
	PORTHOS		5.69	6.55	6.56
	PRINTA		5.20	5.48	5.73
MEP+ETH	ARAMIR		6.13	6.78	6.18
	ATHOS		5.89	6.71	6.80
	GEORGIE		6.14	6.66	6.41
	JULIA		5.69	5.76	5.92
	JUPITER		6.27	6.52	6.44
	LOFAABED		6.06	6.68	6.36
	MALAABED		6.21	7.00	6.02
	MINAK		6.04	5.91	5.55
	PORTHOS		6.18	6.65	6.46
	PRINTA		5.55	5.82	5.92

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

TABLE	VARIETY	N	GRTH REG* VARIETY
SED	0.201	0.130	0.284

TABLE	GRTH REG* N	VARIETY N	GRTH REG* VARIETY N
SED	0.184	0.291	0.411

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

VARIETY	0.245	
N	0.269	
GRTH REG.VARIETY		0.347
GRTH REG.N		0.380

* WITHIN SAME LEVEL OF GRTH REG ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.COLSP	18	0.284	4.6
BLOCK.WP.ROWSP	4	0.184	3.0
BLOCK.WP.COLSP.ROWSP	36	0.310	5.0

GRAIN MEAN DM% 81.5

SUB PLOT AREA HARVESTED 0.00130

https://doi.org/10.23637/ERADOC-1-30

78/W/B/4 LANSOME III (W)

GRAIN TONNES/HECTARE

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

GRTH REG VARIETY	NONE	MEP+ETH	MEAN
ARAMIR	4.62	4.66	4.64
ATHOS	4.36	4.83	4.60
GEORGIE	4.08	4.99	4.53
JULIA	3.53	4.29	3.91
JUPITER	4.23	4.96	4.59
LOFAABED	4.03	4.51	4.27
MALAABED	4.05	4.49	4.27
MINAK	4.49	4.95	4.72
PORTHOS	4.54	4.82	4.68
PRINTA	4.44	4.70	4.57
MEAN	4.24	4.72	4.48

N VARIETY	38	75	113	MEAN
ARAMIR	3.47	4.97	5.48	4.64
ATHOS	3.47	4.93	5.39	4.60
GEORGIE	3.22	4.90	5.48	4.53
JULIA	2.91	4.15	4.67	3.91
JUPITER	3.47	4.87	5.43	4.59
LOFAABED	3.39	4.40	5.02	4.27
MALAABED	3.48	4.18	5.15	4.27
MINAK	3.51	4.86	5.79	4.72
PORTHOS	3.58	4.93	5.52	4.68
PRINTA	3.65	4.71	5.35	4.57
MEAN	3.42	4.69	5.33	4.48

N GRTH REG	38	75	113	MEAN
NONE	3.06	4.49	5.15	4.24
MEP+ETH	3.77	4.88	5.51	4.72
MEAN	3.42	4.69	5.33	4.48

https://doi.org/10.23637/ERADOC-1-30

78/W/B/4 LANSOME III (W)

GRAIN TONNES/HECTARE

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

GRTH REG	VARIETY	N	38	75	113
NONE	ARAMIR		3.46	4.83	5.57
	ATHOS		3.24	4.68	5.17
	GEORGIE		2.71	4.37	5.15
	JULIA		2.40	3.90	4.29
	JUPITER		3.02	4.67	4.99
	LOFAABED		2.98	4.08	5.02
	MALAABED		3.08	4.03	5.04
	MINAK		3.15	4.59	5.74
	PORTHOS		3.28	4.97	5.36
	PRINTA		3.32	4.82	5.18
MEP+ETH	ARAMIR		3.47	5.10	5.40
	ATHOS		3.71	5.19	5.60
	GEORGIE		3.73	5.42	5.80
	JULIA		3.42	4.40	5.05
	JUPITER		3.92	5.08	5.87
	LOFAABED		3.79	4.71	5.01
	MALAABED		3.88	4.32	5.27
	MINAK		3.87	5.12	5.85
	PORTHOS		3.87	4.89	5.69
	PRINTA		3.98	4.59	5.53

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

TABLE	VARIETY	N	GRTH REG* VARIETY
SED	0.341	0.162	0.482

TABLE	GRTH REG* N	VARIETY N	GRTH REG* VARIETY N
SED	0.229	0.415	0.587

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

VARIETY	0.271	
N	0.389	
GRTH REG.VARIETY		0.383
GRTH REG.N		0.550

* WITHIN SAME LEVEL OF GRTH REG ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.COLSP	18	0.482	10.8
BLOCK.WP.ROWSP	4	0.229	5.1
BLOCK.WP.COLSP.ROWSP	36	0.324	7.2

GRAIN MEAN DM% 79.2

SUB PLOT AREA HARVESTED 0.00173

https://doi.org/10.23637/ERADOC-1-30

78/R/B/5

SPRING BARLEY

CONTROLLED DROP APPLICATION OF TRIDEMORPH

Object: To compare controlled drop application with conventional spraying on the deposition of spray material, control of mildew and on the yield of spring barley - Gt. Knott III.

Sponsors: A.J. Arnold, P. Etheridge, F.T. Phillips.

Design: 3 randomised blocks of 10 plots.

Whole plot dimensions: 4.27 x 18.3.

Treatments: All combinations of:-

1. SPRAYER	Sprayer and drop density:	
	CDA 1	Controlled drop application sprayer, standard drop density
	CDA 2	Controlled drop application sprayer, twice standard drop density
	HYDRAUL	Hydraulic sprayer
2. TRI RATE	Rates of applying tridemorph (on 3 June, 1978):	
	1	Standard, 525 g
	1/2	Half standard, 263 g
	1/10	Tenth standard, 52.5 g

NONE plus one extra plot not sprayed

NOTES: (1) CDA sprayer applied tridemorph in 21 l.
(2) Hydraulic sprayer applied tridemorph in 337 l.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Mecoprop plus bromoxynil and ioxynil ('Brittox' at 2.5 l in 220 l).

Seed: Wing, sown at 160 kg.

Cultivations, etc.:- Ploughed: 29 Nov, 1977. Spring-tine cultivated: 11 Mar, 1978. Spring-tine cultivated, seed sown: 15 Mar. Weedkillers applied: 19 May. Combine harvested: 25 Aug. Previous crops: Potatoes 1976, barley 1977.

NOTE: Observations were made on patterns of spray deposition using very small quantities of permethrin as a chemical marker.

https://doi.org/10.23637/ERADOC-1-30

78/R/B/5

GRAIN TONNES/HECTARE

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

TRI RATE / SPRAYER	1	1/2	1/10	MEAN
CDA 1	5.98	6.26	5.82	6.02
CDA 2	6.15	6.25	5.98	6.13
HYDRAUL	6.31	5.88	5.97	6.05
MEAN	6.15	6.13	5.92	6.07

NONE 5.62

GRAND MEAN 6.02

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

TABLE	SPRAYER	TRI RATE	SPRAYER TRI RATE & NONE
SED	0.128	0.128	0.221

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.247	4.1

GRAIN MEAN DM% 84.5

PLOT AREA HARVESTED 0.00390

https://doi.org/10.23637/ERADOC-1-30

78/R/B/7

SPRING BARLEY

MILDEW SENSITIVITY TO ETHIRIMOL

Object: To study the effects of a range of rates of ethirimol seed dressing on mildew sensitivity and yield of barley - Long Hoos V4.

Sponsor: D.W. Hollomon.

Design: 4 randomised blocks of 4 plots.

Whole plot dimensions: 2.41 x 5.18.

Treatments:

ETHIRIMO	Ethirimol seed dressing (g/kg of seed):
0	0.00
1	0.93
4	3.20
16	14.40

NOTE: Surrounds were sown to Proctor not treated against mildew.

Basal applications: Manures: (0:14:28) at 630 kg, 'Nitro-Chalk 25' at 400 kg. Weedkillers: Dicamba with mecoprop and MCPA ('Tetralex Plus' at 5.6 l in 340 l).

Seed: Proctor, sown at 160 kg.

Cultivations, etc.:- PK applied: 23 Nov, 1977. Ploughed: 29 Nov. N applied, spring-tine cultivated: 10 Mar, 1978. Sown: 11 Mar. Weedkillers applied: 10 May. Combine harvested: 26 May. Previous crops: Wheat and barley 1976, potatoes 1977.

NOTES: (1) Plots were inoculated with plants heavily infected with mildew (five strains) on 24 Apr, 1978.
(2) Mildew and its race composition and ethirimol sensitivity were assessed at 3 growth stages during the season.

GRAIN TONNES/HECTARE

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

ETHIRIMO	0	1	4	16	MEAN
	5.35	5.35	5.51	5.46	5.42

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

TABLE	ETHIRIMO
SED	0.112

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

STRATUM	DF	SE	CV%
BLOCK.WP	9	0.159	2.9

GRAIN MEAN DM% 79.6 PLOT AREA HARVESTED 0.00086

https://doi.org/10.23637/ERADOC-1-30

78/R/B/8

SPRING BARLEY

N AND FOLIAR DISEASES

Object: To study the effects of mildew on response to a range of nitrogen rates - Summerdells II.

Sponsors: J.F. Jenkyn, M.E. Finney.

Design: 3 randomised blocks of 6 plots split into 2.

Whole plot dimensions: 4.27 x 16.2.

Treatments: All combinations of:-

Whole plots

1. N — Amounts of nitrogen fertiliser (kg N as 'Nitro-Chalk 26'). Applied: 17 May, 1978:

   25
   50
   70
   90
   110
   135

Sub plots

2. MILDEW F — Mildew fungicide:

   NONE — None
   TRIDEMOR — Tridemorph on 7 June and 6 July

NOTES: (1) Tridemorph was applied at 0.53 kg in 340 l.
(2) Sides of plots were separated by a strip of Mazurka barley 2.13 m wide sprayed tridemorph at above rate on 14 June.

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Dicamba plus mecoprop and MCPA ('Banlene Plus' at 4.9 l in 220 l).

Seed: Zephyr, sown at 160 kg.

Cultivations, etc.:- Ploughed: 23 Nov, 1977. Spring-tine cultivated twice: 15 Mar, 1978. Heavy spring-tine cultivated, power harrowed, seed sown: 17 Apr. Weedkiller applied: 26 May. Combine harvested: 8 Sept. Previous crops: W. oats 1976, barley 1977.

NOTES: (1) Seedling emergence counts were made.
(2) Mildew and brown rust were assessed throughout the season.
(3) Samples were taken for nitrogen analysis.
(4) Ear counts were made before harvest.

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78/R/B/8

GRAIN TONNES/HECTARE

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

MILDEW F N	NONE	TRIDEMOR	MEAN
25	4.30	4.26	4.28
50	4.32	5.01	4.66
70	4.77	5.30	5.04
90	5.02	5.50	5.26
110	5.07	5.45	5.26
135	5.16	5.88	5.52
MEAN	4.77	5.23	5.00

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

TABLE	N	MILDEW F	N MILDEW F
SED	0.245	0.083	0.285
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
N			0.204

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.301	6.0
BLOCK.WP.SP	12	0.249	5.0

GRAIN MEAN DM% 79.0

SUB PLOT AREA HARVESTED 0.00163

https://doi.org/10.23637/ERADOC-1-30

78/R/B/9

SPRING BARLEY

NITRIFICATION INHIBITOR AND FOLIAR DISEASES

Object: To study the effects of adding a nitrification inhibitor to a liquid nitrogen fertiliser on the incidence and control of foliar diseases, N uptake and yield - Summerdells II.

Sponsors: J.F. Jenkyn, M.E. Finney, F.V. Widdowson, A. Penny, J. Ashworth.

Design: 2 randomised blocks of 10 plots split into 4.

Whole plot dimensions: 4.27 x 33.2.

Treatments: All combinations of:-

Whole plots

1. N RATE — Amounts of nitrogen fertiliser (kg N):

   70
   110

2. N FORM — Form of nitrogen fertiliser and nitrification inhibitor:

LIQUID 0	Liquid fertiliser (urea/ammonium nitrate, 26% N), injected before sowing, no nitrification inhibitor
LIQUID I	Liquid fertiliser (urea/ammonium nitrate, 26% N), injected before sowing, with nitrapyrin added as a nitrification inhibitor
NC 0 E	Solid fertiliser ('Nitro-Chalk', 25% N) applied to seedbed, no nitrification inhibitor
NC 0 L	Solid fertiliser ('Nitro-Chalk' 25% N), top-dressed, no nitrification inhibitor
NC 0 EL	Solid fertiliser ('Nitro-Chalk' 25% N), half to seedbed, half top-dressed, no nitrification inhibitor

Sub plots

3. MILDEW F — Mildew fungicide:

NONE	None (duplicated)
TRIDEMOR	Tridemorph on 7 June, 1978 and 6 July (duplicated)

NOTES: (1) A proposed test of benodanil fungicide was not made because there was little rust.
(2) Tridemorph was applied at 0.53 kg in 340 l.
(3) Sides of plots were separated by a 2 m strip of Mazurka sprayed tridemorph at above rate on 14 June.
(4) Liquid nitrogen was applied by injectors with tines 30 cm apart 10 cm deep.
(5) Nitrapyrin was applied at 1 kg.
(6) Nitrogen fertiliser was applied to N FORM LIQUID 0 and LIQUID I and NC 0 E on 6 Apr, and to NC 0 L and NC 0 EL on 22 May.

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 l in 220 l).

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78/R/B/9

Seed: Zephyr, sown at 160 kg.

Cultivations, etc.:- Ploughed: 23 Nov, 1977. Spring-tine cultivated twice: 15 Mar, 1978. Heavy spring-tine cultivated, power harrowed, seed sown: 17 Apr. Weedkiller applied: 26 May. Combine harvested: 8 Sept. Previous crops: Oats 1976, barley 1977.

NOTES: Plant emergence counts were made. Mildew and brown rust were assessed during the season. Counts of ears, numbers of grains per ear and thousand grain weights were made. The crop was sampled for nitrogen and the soil for nitrification of ammonia in the injected bands.

GRAIN TONNES/HECTARE

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

N FORM / N RATE	LIQUID O	LIQUID I	NC O E	NC O L	NC O EL	MEAN
70	5.19	5.23	4.99	5.24	5.42	5.22
110	5.29	5.30	5.28	5.24	5.49	5.32
MEAN	5.24	5.26	5.14	5.24	5.46	5.27

MILDEW F / N RATE	NONE	TRIDEMOR	MEAN
70	4.93	5.50	5.22
110	4.97	5.67	5.32
MEAN	4.95	5.59	5.27

MILDEW F / N FORM	NONE	TRIDEMOR	MEAN
LIQUID O	4.93	5.55	5.24
LIQUID I	5.06	5.46	5.26
NC O E	4.84	5.44	5.14
NC O L	4.87	5.61	5.24
NC O EL	5.05	5.86	5.46
MEAN	4.95	5.59	5.27

N RATE	MILDEW F / N FORM	NONE	TRIDEMOR
70	LIQUID O	4.86	5.53
	LIQUID I	5.01	5.45
	NC O E	4.71	5.27
	NC O L	5.05	5.43
	NC O EL	5.03	5.82
110	LIQUID O	5.01	5.58
	LIQUID I	5.12	5.48
	NC O E	4.96	5.61
	NC O L	4.69	5.79
	NC O EL	5.07	5.90

https://doi.org/10.23637/ERADOC-1-30

78/R/B/9

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

TABLE	N RATE	N FORM	MILDEW F	N RATE N FORM
SED	0.092	0.145	0.063	0.205

TABLE	N RATE MILDEW F	N FORM MILDEW F	N RATE N FORM MILDEW F
SED	0.111	0.176	0.249
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
N RATE	0.089		
N FORM		0.141	
N RATE.N FORM			0.199

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

STRATUM	DF	SE	CV%
BLOCK.WP	9	0.205	3.9
BLOCK.WP.SP	50	0.282	5.3

GRAIN MEAN DM% 79.0

SUB PLOT AREA HARVESTED 0.00163

https://doi.org/10.23637/ERADOC-1-30 *pp 21*

78/R/B/10

SPRING BARLEY

SOWING DATES AND PATHOGEN CONTROL

Object: To study the effects of aphid, virus and fungus control on pathogens and yield of barley sown on two dates - Webbs.

Sponsors: R.T. Plumb, J.F. Jenkyn.

Design: 2 replicates of 2 x 2 x 2 x 2 in blocks of 8 plots.

Whole plot dimensions: 6.40 x 18.3.

Treatments: All combinations of:-

1. SOW DATE	Dates of sowing:	
	8 MAR	8 March, 1978
	24 APR	24 April
2. FUNGCIDE	Fungicide:	
	NONE	None
	ETHIRIMO	Ethirimol seed dressing
3. APHICIDE(1)	Aphicide to seedbed:	
	NONE	None
	PHORATE	Phorate at 5 kg as granules
4. APHICIDE(2)	Aphicide on 10 July:	
	NONE	NONE
	DIMETH	Dimethoate at 0.34 kg in 220 l

NOTE: Tridemorph applied to surrounds at 0.53 kg in 340 l on 14 June.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Dicamba with mecoprop and MCPA (as 'Banlene Plus' at 4.9 l in 220 l).

Seed: Wing, sown at 160 kg.

Cultivations, etc.:- Ploughed: 21 Dec, 1977. Spring-tine cultivated all plots: 7 Mar, 1978. Power harrowed for early sowing: 8 Mar. Power harrowed for late sowing: 24 Apr. Weedkillers applied to early sowing: 18 May. Weedkillers applied to late sowing: 26 May. Early-sown plots combine harvested: 21 Aug. Late-sown plots combine harvested: 25 Aug. Previous crops: Potatoes 1976, barley 1977.

NOTE: Emergence counts were made for both sowings. Aphid counts were made on seven occasions and virus scores six times. Tiller counts were made once, and counts of grains per ear were made at harvest.

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GRAIN TONNES/HECTARE

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

FUNGCIDE SOW DATE	NONE	ETHIRIMO	MEAN
8 MAR	5.50	6.14	5.82
24 APR	5.01	4.82	4.91
MEAN	5.25	5.48	5.37

APHICIDE(1) SOW DATE	NONE	PHORATE	MEAN
8 MAR	5.75	5.89	5.82
24 APR	4.81	5.01	4.91
MEAN	5.28	5.45	5.37

APHICIDE(1) FUNGCIDE	NONE	PHORATE	MEAN
NONE	5.18	5.33	5.25
ETHIRIMO	5.39	5.57	5.48
MEAN	5.28	5.45	5.37

APHICIDE(2) SOW DATE	NONE	DIMETH	MEAN
8 MAR	5.87	5.77	5.82
24 APR	4.84	4.98	4.91
MEAN	5.36	5.37	5.37

APHICIDE(2) FUNGCIDE	NONE	DIMETH	MEAN
NONE	5.28	5.23	5.25
ETHIRIMO	5.44	5.52	5.48
MEAN	5.36	5.37	5.37

APHICIDE(2) APHICIDE(1)	NONE	DIMETH	MEAN
NONE	5.35	5.22	5.28
PHORATE	5.37	5.53	5.45
MEAN	5.36	5.37	5.37

FUNGCIDE	NONE		ETHIRIMO	
APHICIDE(1)	NONE	PHORATE	NONE	PHORATE
SOW DATE				
8 MAR	5.53	5.47	5.98	6.30
24 APR	4.84	5.18	4.79	4.85

FUNGCIDE	NONE		ETHIRIMO	
APHICIDE(2)	NONE	DIMETH	NONE	DIMETH
SOW DATE				
8 MAR	5.51	5.49	6.24	6.04
24 APR	5.06	4.96	4.63	5.01

https://doi.org/10.23637/ERADOC-1-30

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GRAIN TONNES/HECTARE

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

APHICIDE(1)	NONE		PHORATE	
APHICIDE(2)	NONE	DIMETH	NONE	DIMETH
SOW DATE				
8 MAR	5.89	5.61	5.86	5.92
24 APR	4.81	4.82	4.88	5.15

APHICIDE(1)	NONE		PHORATE	
APHICIDE(2)	NONE	DIMETH	NONE	DIMETH
FUNGCIDE				
NONE	5.27	5.10	5.30	5.36
ETHIRIMO	5.44	5.33	5.44	5.71

APHICIDE(1)		NONE		PHORATE	
APHICIDE(2)		NONE	DIMETH	NONE	DIMETH
SOW DATE	FUNGCIDE				
8 MAR	NONE	5.65	5.41	5.37	5.58
	ETHIRIMO	6.14	5.82	6.34	6.26
24 APR	NONE	4.89	4.79	5.22	5.13
	ETHIRIMO	4.73	4.85	4.53	5.17

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

TABLE	SOW DATE	FUNGCIDE	APHICIDE(1)	APHICIDE(2)
SED	0.104	0.104	0.104	0.104

TABLE	SOW DATE FUNGCIDE	SOW DATE APHICIDE(1)	FUNGCIDE APHICIDE(1)	SOW DATE APHICIDE(2)
SED	0.147	0.147	0.147	0.147

TABLE	FUNGCIDE APHICIDE(2)	APHICIDE(1) APHICIDE(2)	SOW DATE FUNGCIDE APHICIDE(1)	SOW DATE FUNGCIDE APHICIDE(2)
SED	0.147	0.147	0.207	0.207

TABLE	SOW DATE APHICIDE(1) APHICIDE(2)	FUNGCIDE APHICIDE(1) APHICIDE(2)
SED	0.207	0.207

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	0.293	5.5

GRAIN MEAN DM% 84.6

PLOT AREA HARVESTED 0.00260

https://doi.org/10.23637/ERADOC-1-30

78/R/B/17

SPRING BARLEY

MILDEW CONTROL IN A SERIALLY BALANCED DESIGN

Object: To study the effects of two fungicides and the effects of interference between plots on the incidence of mildew and on yield - Webbs.

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

Design: 8 'blocks' of 3 plots (+ flanking plots).

Whole plot dimensions: 4.27 x 9.14.

Treatments:

FUNGCIDE	Fungicides
NONE	None
TRIADIME	Triadimefon
TRIDEMOR	Tridemorph

NOTES: (1) Treatments were applied to 26 plots in one line in an order such that each of the possible sets of 3 adjacent treatments occurred exactly twice, (omitting sets with the same treatments on 2 successive plots). The effects of treatments to neighbouring plots (left-hand neighbour LHN, right-hand neighbour RHN) are estimated in the analysis. In this experiment 'left' was east and 'right' was west.

(2) Fungicide treatments were applied on 7 June, 1978. Tridemorph was applied at 0.53 kg in 340 l, triadimefon at 0.13 kg in 340 l.

(3) The experiment had an 18 m surround sown to barley variety Wing, seed dressed ethirimol, sprayed tridemorph at 0.53 kg in 340 l on 14 June.

Basal applications: Manures: (20:14:14) at 440 kg combine drilled. Weedkillers: Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 kg) in 220 l.

Seed: Julia, sown at 160 kg.

Cultivations, etc.:- Ploughed: 21 Dec, 1977. Spring-tine cultivated twice: 7 Mar, 1978, 25 Mar. Seed sown: 25 Mar. Weedkillers applied: 18 May. Combine harvested: 21 Aug. Previous crops: Potatoes 1976, barley 1977.

NOTE: Seedling emergence counts were made. Mildew was assessed on two occasions.

https://doi.org/10.23637/ERADOC-1-30

78/R/B/17

GRAIN TONNES/HECTARE

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

VARIATE: GRAIN (AT 85% DM) TONNES/HECTARE

GRAND MEAN 6.76

FUNGCIDE	NONE	TRIADIME	TRIDEMOR
	6.13	7.21	6.95

LHN FUNGCIDE	NONE	TRIADIME	TRIDEMOR
NONE		6.00	6.25
TRIADIME	7.29		7.13
TRIDEMOR	6.99	6.90	

RHN FUNGCIDE	NONE	TRIADIME	TRIDEMOR
NONE		6.08	6.17
TRIADIME	7.26		7.16
TRIDEMOR	7.09	6.80	

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

TABLE	FUNGCIDE	FUNGCIDE LHN	FUNGCIDE RHN
REP	8	4	4
SED	0.237	0.335	0.335

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

STRATUM	DF	SE	CV%
WP	11	0.473	7.0

GRAIN MEAN DM% 84.3

PLOT AREA HARVESTED 0.00172

https://doi.org/10.23637/ERADOC-1-30 *pp 26*

78/R/B/18

SPRING BARLEY

MIXED VARIETIES AND MILDEW

Object: To study the effects of variety mixtures and different fungicides on mildew development and yield - Summerdells II.

Sponsor: J.F. Jenkyn.

Design: 4 randomised blocks of 9 plots.

Whole plot dimensions: 6.40 x 9.14.

Treatments:

VAR FUNG	Varieties and fungicides:
H 0	Hassan, no fungicide
M 0	Midas, no fungicide
W 0	Wing, no fungicide
H T	Hassan, seed treated triforine
W E	Wing, seed treated ethirimol
HO MO WO	Mixture of the three varieties, no fungicide
HO MO WE	Mixture of the three varieties. Ethirimol seed treatment to Wing only
HT MO WO	Mixture of the three varieties. Triforine seed treatment to Hassan only
HT MO WE	Mixture of the three varieties. Triforine seed treatment to Hassan, none to Mazurka, ethirimol to Wing

NOTE: All plots were separated at their sides by 10.7 m of variety Proctor, seed dressed ethirimol, and at their ends by 12 m of variety Proctor, seed dressed organo-mercury. All the Proctor was sprayed with tridemorph at 0.53 kg in 220 l on 14 June, 1978. Yields were taken from the Proctor adjacent to the sides of plots, and used for covariance analysis.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 l in 220 l).

Seed: All seed sown at 160 kg except internal headlands sown at 78 kg.

Cultivations, etc.:- Ploughed: 23 Nov, 1977. Spring-tine cultivated twice: 15 Mar, 1978. Heavy spring-tine cultivated, rotary harrowed, seed sown on plots (and covariate plots): 10 Apr. Seed sown on headlands and surrounds: 17 Apr. Weedkiller applied: 24 May. Combine harvested: 9 Sept. Previous crops: W. oats 1976, s. wheat 1977.

NOTE: Seedling emergence counts were made. Mildew was assessed on three occasions.

https://doi.org/10.23637/ERADOC-1-30

78/R/B/18

GRAIN TONNES/HECTARE

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

VAR FUNG	
H O	4.44
M O	5.09
W O	4.86
H T	4.60
W E	4.82
HO MO WO	4.83
HO MO WE	5.18
HT MO WO	4.87
HT MO WE	4.92
MEAN	4.85

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

TABLE	VAR FUNG
SED	0.215

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

STRATUM	DF	SE	CV%
BLOCK.WP	23	0.300	6.2

GRAIN MEAN DM% 80.8

PLOT AREA HARVESTED 0.00260

https://doi.org/10.23637/ERADOC-1-30