ROTHAMSTED RESEARCH

Yields of the Field Experiments 1979

Full Table of Content

Annuals - Wheat

Rothamsted Research

Rothamsted Research (1980) *Annuals - Wheat ;* Yields Of The Field Experiments 1979, pp 244 - 288 **- DOI: https://doi.org/10.23637/ERADOC-1-45**

79/R/WW/1 and 79/W/WW/1

WINTER WHEAT

VARIETIES AND N

Object: To study the yields and flour quality of a selection of the newer varieties of winter wheat and the effects of nitrogen on them on land in rotation (pathogen free) and after cereal (pathogen infected) - Rothamsted Fosters Corner (pathogen free RH) and Pastures (pathogen infected RD), Woburn Horsepool Lane Close East (pathogen free WH).

Sponsors: R. Moffitt, R.J. Gutteridge.

Design: 3 randomised blocks of 8 plots split into 4 (except Woburn 4 blocks).

Whole plot dimensions: 4.27 x 27.1.

Treatments: All combinations of:-

Whole plots

1. VARIETY — Varieties:

ARMADA	Armada
COPAIN	Copain
FLANDERS	Flanders
HUSTLER	Hustler
MARDLER	Mardler
HUNTSMAN	Maris Huntsman
SENTRY	Sentry
SPORTSMN	Sportsman

Sub plots

2. N — Nitrogen fertiliser (kg N):

(RH)	(RD&WH)	Fosters Corner (RH)	Pastures (RD) & Horsepool Lane Close East (WH
0	63	0	63 in spring
63	126	63 in spring	126 in spring
126	189	126 in spring	189 in spring
63+63	126+63	63 in spring + 63 at flowering	126 in spring + 63 at flowering

NOTE: Spring N was applied as 'Nitro-Chalk'. N at flowering was applied as aqueous urea (6% N) in two equal applications at 31.5 kg on 19 June, 12 July to Fosters Corner (RH) and Pastures (RD) and as 'Nitro-Chalk' in one application on 25 June, to Horsepool Lane Close East (WH).

Basal applications: Manures: Fosters Corner (RH), Pastures (RD) and Horsepool Lane Close East (WH): (0:20:20) at 310 kg (RH) and (RD) combine drilled, (WH) broadcast. Weedkillers: Fosters Corner (RH): Bromoxynil and ioxynil (as 'Oxytril CM' at 2.1 kg in 220 l). Pastures (RD): Mecoprop at 2.5 kg in 220 l. Horsepool Lane Close East (WH): Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg in 250 l).

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79/R/WW/1 and 79/W/WW/1

Seed: Fosters Corner (RH) and Pastures (RD): Varieties sown at 190 kg.
Horsepool Lane Close East (WH): Varieties sown at 180 kg.

Cultivations, etc.:-
Fosters Corner (RH): Heavy spring-tine cultivated twice, seed sown: 23 Oct, 1978. N applied: 3 May, 1979. Weedkillers applied: 14 May. Combine harvested: 31 Aug. Previous cropping: Beans 1977, potatoes 1978.
Pastures (RD): Ploughed: 17 Oct, 1978. Rotary harrowed, seed sown: 23 Oct. N and weedkiller applied: 8 May, 1979. Combine harvested: 31 Aug. Previous cropping: Beans 1977, wheat 1978.
Horsepool Lane Close East (WH): Heavy spring-tine cultivated twice: 11 Oct, 1978, 13 Oct. PK applied, spring-tine cultivated with crumbler attached: 17 Oct. Seed sown: 20 Oct. N applied: 26 Apr, 1979. Weedkillers applied: 15 May. Combine harvested: 31 Aug. Previous crops: Winter oats 1977, potatoes 1978.

NOTE: Samples were taken in July on Pastures (RD) for estimates of eyespot (Pseudocercosporella herpotrichoides) and take-all (Gaeumannomyces graminis).

79/R/WW/1 FOSTERS CORNER (RH) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

N	0	63	126	63+63	MEAN
VARIETY					
ARMADA	4.14	6.49	6.82	6.65	6.03
COPAIN	3.32	6.12	7.08	6.35	5.72
FLANDERS	3.91	6.42	6.84	6.64	5.96
HUSTLER	3.68	6.48	6.39	6.68	5.81
MARDLER	4.04	6.27	6.05	6.30	5.67
HUNTSMAN	3.82	6.53	7.09	6.61	6.01
SENTRY	3.72	6.09	5.95	5.94	5.42
SPORTSMN	4.44	5.63	6.07	6.50	5.66
MEAN	3.88	6.25	6.54	6.46	5.78

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

TABLE	VARIETY	N	VARIETY N
SED	0.143	0.103	0.290
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY			0.292

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	0.175	3.0
BLOCK.WP.SP	48	0.358	6.2

GRAIN MEAN DM% 83.9

SUB PLOT AREA HARVESTED 0.00173

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79/R/WW/1 PASTURES (RD) PATHOGEN INFECTED

GRAIN TONNES/HECTARE

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

N VARIETY	63	126	189	126+63	MEAN
ARMADA	5.13	6.03	5.06	5.31	5.38
COPAIN	4.95	6.30	6.63	6.26	6.03
FLANDERS	5.22	5.80	6.00	5.91	5.73
HUSTLER	5.34	6.22	5.49	5.87	5.73
MARDLER	5.32	5.87	5.37	5.34	5.48
HUNTSMAN	5.66	6.47	6.56	6.43	6.28
SENTRY	5.15	5.78	5.99	5.72	5.66
SPORTSMN	5.65	5.76	5.19	5.40	5.50
MEAN	5.30	6.03	5.79	5.78	5.72

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

TABLE	VARIETY	N	VARIETY N
SED	0.191	0.112	0.334
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY			0.316

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	0.234	4.1
BLOCK.WP.SP	48	0.387	6.8

GRAIN MEAN DM% 85.5

SUB PLOT AREA HARVESTED 0.00172

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79/W/WW/1 HORSEPOOL LANE CLOSE EAST (WH) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

N VARIETY	63	126	189	126+63	MEAN
ARMADA	4.93	4.78	4.45	4.82	4.75
COPAIN	4.17	4.56	4.21	4.13	4.27
FLANDERS	4.75	4.53	4.10	4.39	4.44
HUSTLER	4.57	4.25	3.76	4.02	4.15
MARDLER	4.36	4.27	3.36	3.37	3.84
HUNTSMAN	4.63	4.51	4.15	4.08	4.34
SENTRY	4.14	4.08	3.19	3.60	3.75
SPORTSMN	3.64	3.05	2.64	3.03	3.09
MEAN	4.40	4.25	3.73	3.93	4.08

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

TABLE	VARIETY	N	VARIETY N
SED	0.168	0.095	0.286
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY			0.267

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

STRATUM	DF	SE	CV%
BLOCK.WP	14	0.206	5.1
BLOCK.WP.SP	48	0.328	8.0

GRAIN MEAN DM% 82.8

SUB PLOT AREA HARVESTED 0.00173

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79/R/WW/2 and 79/W/WW/2

WINTER WHEAT

AQUEOUS N AND NITRIFICATION INHIBITORS

Object: To study the effects of adding nitrification inhibitors to aqueous urea on the yield and nitrogen uptake of winter wheat. At Rothamsted only, the effects of conventional and direct drilling are also studied - Rothamsted (R) Pastures and Woburn (W) Warren Field I.

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

Design: 2 randomised blocks each containing 4 sub-blocks of 3 plots, plus 6 extra plots. At Rothamsted another factor (drilling) was applied to half-blocks in a criss-cross manner.

Whole plot dimensions: Pastures (R): 4.27 x 29.0.
Warren Field I (W): 4.27 x 12.2.

Treatments: All combinations of:-

Sub-blocks (SB)

1. AQ N AUT — Rates of nitrogen (kg N) injected in autumn as aqueous urea:

   50
   100

2. TOTAL N — Total rates of nitrogen (kg N), part applied in autumn (AQ N AUT), part in spring as 'Nitro-Chalk':

   150 — Total 150 (100 in spring to AQ N AUT 50, 50 in spring to AQ N AUT 100)
   200 — Total 200 (150 in spring to AQ N AUT 50, 100 in spring to AQ N AUT 100)

Plots (WP)

3. N INHIB — Nitrification inhibitors added to aqueous urea:

   NITRAPYR — Nitrapyrin at 1.5 kg
   PEX 2 — Potassium ethyl xanthate at 2 kg
   PEX 10 — Potassium ethyl xanthate at 10 kg

plus six extra plots given 'Nitro-Chalk' only in spring (kg N):

   EXTRA

   0
   NC 50
   NC 100
   NC 150
   NC 200
   NC 250

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79/R/WW/2 and 79/W/WW/2

Half-blocks (HB) (R only)

4. DRILLING Drilling method:

CNVNTIAL	Conventional
DIRECT	Direct drilled

NOTE: 'Nitro-Chalk' dressings were divided, two-thirds in April, one-third in May.

Basal applications:
Pastures (R): Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Paraquat at 0.42 kg ion in 220 l. Mecoprop at 2.5 kg in 220 l. Growth regulator: Chlormequat at 1.7 kg in 220 l.
Warren Field I (W): Manures: (0:20:20) at 310 kg. Weedkillers: Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 kg in 250 l). Growth regulator: Chlormequat at 1.7 kg in 250 l.

Seed: Pastures (R): Flanders, sown at 190 kg.
Warren Field I (W): Maris Kinsman, sown at 190 kg.

Cultivations, etc.:-
Pastures (R): 'CNVNTIAL': Chisel ploughed twice: 6 Oct, 1978. Aqueous N with inhibitors injected: 9 Oct. All plots disc harrowed, seed sown, 'CNVNTIAL' plots harrowed in, 'DIRECT' plots disced in: 12 Oct. Paraquat applied: 23 Oct. 'Nitro-Chalk' applied: 20 Apr, 1979. Mecoprop applied: 9 May. 'Nitro-Chalk' applied: 17 May. Growth regulator applied: 1 June. Combine harvested: 29 Aug. Previous cropping: Beans 1977, wheat 1978.
Warren Field I (W): Heavy spring-tine cultivated: 11 Sept, 1978. Deep-tine cultivated: 18 Sept. Aqueous N with inhibitors injected: 10 Oct. PK applied: 17 Oct. Disc harrowed twice: 13-14 Nov. Seed sown: 14 Nov. 'Nitro-Chalk' applied: 23 Apr, 1979. Weedkiller applied: 15 May. 'Nitro-Chalk' applied: 18 May. Growth regulator applied: 1 June. Combine harvested: 31 Aug. Previous cropping: Potatoes 1977, wheat 1978.

NOTE: At Rothamsted only soil samples were taken at monthly intervals, November to July for measurements of nitrate and ammonia.

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79/R/WW/2 PASTURES(R)

GRAIN TONNES/HECTARE

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

N INHIB AQ N AUT	NITRAPYR	PEX 2	PEX 10	MEAN
50	5.70	5.17	5.55	5.47
100	6.01	5.61	5.42	5.68
MEAN	5.85	5.39	5.48	5.58

TOTAL N AQ N AUT	150	200	MEAN
50	5.38	5.56	5.47
100	5.20	6.17	5.68
MEAN	5.29	5.86	5.58

TOTAL N N INHIB	150	200	MEAN
NITRAPYR	5.68	6.02	5.85
PEX 2	5.09	5.69	5.39
PEX 10	5.09	5.88	5.48
MEAN	5.29	5.86	5.58

DRILLING AQ N AUT	CNVNTIAL	DIRECT	MEAN
50	5.53	5.42	5.47
100	5.69	5.68	5.68
MEAN	5.61	5.55	5.58

DRILLING N INHIB	CNVNTIAL	DIRECT	MEAN
NITRAPYR	5.91	5.80	5.85
PEX 2	5.38	5.41	5.39
PEX 10	5.53	5.44	5.48
MEAN	5.61	5.55	5.58

DRILLING TOTAL N	CNVNTIAL	DIRECT	MEAN
150	5.32	5.26	5.29
200	5.89	5.84	5.86
MEAN	5.61	5.55	5.58

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79/R/WW/2 PASTURES(R)

GRAIN TONNES/HECTARE

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

N INHIB	NITRAPYR		PEX 2		PEX 10	
TOTAL N	150	200	150	200	150	200
AQ N AUT						
50	5.61	5.78	5.01	5.33	5.51	5.58
100	5.75	6.27	5.17	6.05	4.67	6.18

N INHIB	NITRAPYR		PEX 2		PEX 10	
DRILLING	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
AQ N AUT						
50	5.78	5.61	5.13	5.22	5.67	5.42
100	6.03	5.99	5.63	5.60	5.40	5.45

TOTAL N	150		200	
DRILLING	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
AQ N AUT				
50	5.48	5.28	5.58	5.55
100	5.16	5.23	6.21	6.12

TOTAL N	150		200	
DRILLING	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N INHIB				
NITRAPYR	5.76	5.61	6.06	5.99
PEX 2	5.08	5.11	5.69	5.70
PEX 10	5.13	5.05	5.94	5.82

	TOTAL N	150		200	
	DRILLING	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
AQ N AUT	N INHIB				
50	NITRAPYR	5.65	5.58	5.91	5.64
	PEX 2	4.98	5.05	5.28	5.38
	PEX 10	5.81	5.22	5.53	5.63
100	NITRAPYR	5.87	5.64	6.20	6.34
	PEX 2	5.17	5.18	6.09	6.01
	PEX 10	4.44	4.89	6.35	6.00

DRILLING	CNVNTIAL	DIRECT	MEAN
EXTRA			
0	1.84	1.60	1.72
NC 50	3.03	3.60	3.31
NC 100	4.50	4.17	4.33
NC 150	5.81	5.85	5.83
NC 200	6.22	5.19	5.71
NC 250	5.78	6.38	6.08
MEAN	4.53	4.47	4.50

GRAND MEAN 5.22

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79/R/WW/2 PASTURES(R)

GRAIN TONNES/HECTARE

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

TABLE	AQ N AUT	N INHIB	TOTAL N	EXTRA
SED	0.288	0.153	0.288	0.706

TABLE	AQ N AUT N INHIB	AQ N AUT TOTAL N	N INHIB TOTAL N	AQ N AUT* DRILLING
SED	0.338	0.408	0.338	0.330
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
AQ N AUT	0.217			0.358
TOTAL N			0.217	

TABLE	N INHIB* DRILLING	TOTAL N* DRILLING	AQ N AUT N INHIB TOTAL N	AQ N AUT* N INHIB DRILLING
SED	0.217	0.330	0.478	0.414
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
N INHIB	0.379			
AQ N AUT				0.437
TOTAL N		0.358		
AQ N AUT.TOTAL N			0.307	
AQ N AUT.DRILLING				0.307

TABLE	AQ N AUT* TOTAL N DRILLING	N INHIB* TOTAL N DRILLING	AQ N AUT* N INHIB TOTAL N DRILLING	DRILLING* EXTRA
SED	0.467	0.414	0.586	0.809
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
TOTAL N		0.437		
AQ N AUT.TOTAL N	0.424		0.553	
TOTAL N.DRILLING		0.307		
AQ N AUT.TOTAL N.DRILLING			0.434	
EXTRA				0.622

* WITHIN THE SAME LEVEL OF DRILLING ONLY

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

STRATUM	DF	SE	CV%
BLOCK.SB	9	0.576	11.0
BLOCK.SB.HB	9	0.322	6.2
BLOCK.SB.HB.WP	16	0.434	8.3

GRAIN MEAN DM% 84.6

SUB PLOT AREA HARVESTED 0.00290

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79/W/WW/2 WARREN FIELD (W)

GRAIN TONNES/HECTARE

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

N INHIB / AQ N AUT	NITRAPYR	PEX 2	PEX 10	MEAN
50	4.72	4.99	5.10	4.94
100	4.77	4.33	4.48	4.53
MEAN	4.74	4.66	4.79	4.73

TOTAL N / AQ N AUT	150	200	MEAN
50	5.20	4.68	4.94
100	4.16	4.89	4.53
MEAN	4.68	4.79	4.73

TOTAL N / N INHIB	150	200	MEAN
NITRAPYR	5.09	4.39	4.74
PEX 2	4.42	4.91	4.66
PEX 10	4.53	5.05	4.79
MEAN	4.68	4.79	4.73

AQ N AUT	TOTAL N / N INHIB	150	200
50	NITRAPYR	5.19	4.25
	PEX 2	5.13	4.86
	PEX 10	5.27	4.93
100	NITRAPYR	4.99	4.54
	PEX 2	3.70	4.97
	PEX 10	3.80	5.16

EXTRA	0	NC 50	NC 100	NC 150	NC 200	NC 250	MEAN
	1.79	4.31	5.28	5.15	4.48	3.59	4.10

GRAND MEAN 4.52

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

TABLE	EXTRA	AQ N AUT	N INHIB	TOTAL N
SED	0.330	0.135	0.062	0.135

TABLE	AQ N AUT N INHIB	AQ N AUT TOTAL N	N INHIB TOTAL N	AQ N AUT N INHIB TOTAL N
SED	0.153	0.190	0.153	0.216
EXCEPT WHEN COMPARING MEANS WITH SAME LEVELS(S) OF:				
AQ N AUT	0.088			
TOTAL N			0.088	
AQ N AUT.TOTAL N				0.124

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

STRATUM	DF	SE	CV%
BLOCK.SB	9	0.190	4.2
BLOCK.SB.WP	8	0.124	2.7

GRAIN MEAN DM% 86.6 SUB PLOT AREA HARVESTED 0.0279

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79/R/WW/3

WINTER WHEAT

FACTORS LIMITING YIELD

Object: To study the effects of a range of factors on the incidence of pests and diseases and on the growth and yield of wheat - West Barnfield I.

Sponsors: C.F. Banfield, A. Dewar, J. Lacey, A. Penny, R.T. Plumb, R.D. Prew, G.N. Thorne, T.D. Williams.

Associate sponsors: P.J. Welbank, F.V. Widdowson.

Design: Half replicate of 2^8 + 6 extra plots.

Whole plot dimensions: 3.25 x 15.2.

Treatments: Combinations of:-

1. DRILL — Drills, sowing seed at 380 seeds per m^2 in rows 10 cm (4 in) apart:
   - NORDSTEN — Nordsten drill spacing seed irregularly within the row
   - STANHAY — Stanhay precision drill
2. SOWDATE — Dates of sowing:
   - 21 SEPT — 21 September, 1978
   - 13 OCT — 13 October
3. TOTAL N — Total amount of nitrogen fertiliser (kg N) applied:
   - 160
   - 250
4. N TIME — Times of applying nitrogen fertiliser:
   - A — All applied on 6 April
   - M A M — 40 kg of the total applied on 12 March, 30 kg applied on 17 May, remainder on 6 April
5. AUT PEST — Autumn pesticide:
   - NONE — None
   - ALDICARB — Aldicarb at 5 kg worked in to seedbed
6. APHICIDE — Aphicide:
   - NONE — None
   - PIRIMICA — Pirimicarb at 0.14 kg in 340 l applied twice: 26 June and 17 July
7. FUNGCIDE — Fungicide:
   - NONE — None
   - CA+MA+TR — Carbendazim + maneb + tridemorph (as 'Cosmic' at 4.0 kg) in 340 l applied twice: 30 May and 26 June

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79/R/WW/3

8. IRRIGATN Irrigation:

NONE	None
FULL	Full (125 mm) to lessen a deficit of 25 mm to 12.5 mm

plus six extra plots, all sown by Stanhay drill on 21 Sept, all N applied on 6 Apr, given aldicarb, pirimicarb, carbendazim + maneb + tridemorph and full irrigation, testing rates of nitrogen fertiliser (kg N):

EXTRA

N 0
N 100
N 130
N 190
N 220
N 280

NOTE: Irrigation treatments were as follows:-

	mm water
5 July	25
10/12 July	50
19 July	25
25 July	25

Basal applications: Manures: (0:14:28) at 360 kg. Weedkillers: Methabenzthiazuron at 1.6 kg in 340 l. Growth regulator: Chlormequat at 1.4 kg in 340 l.

Seed: Maris Hustler, sown at 174 kg.

Cultivations, etc.:- Harrowed: 13 Sept, 1978. PK applied: 14 Sept. Heavy spring-tine cultivated twice: 15 Sept. Power harrowed all early-sown treatments, and those for STANHAY rolled: 20 Sept. Seed sown on all early-sown plots: 21 Sept. Power harrowed all late-sown plots: 12 Oct. Late-sown STANHAY plots rolled, seed sown on all late-sown plots: 13 Oct. Weedkillers applied: 19 Oct. Growth regulator applied to early-sown plots: 18 Apr, 1979. Growth regulator applied to late-sown plots: 8 May. Combine harvested: 31 Aug. Previous cropping: Fallow, oats, barley, wheat 1977, potatoes 1978.

NOTES: (1) The growth regulator was applied to both the early and late sown crops at Zadoks Growth Stage 3.0.
(2) Soil was sampled for nematodes, mineral N and moisture content. Roots were sampled for foot and root rots. The above ground crop was examined for growth stage, aphids, foliar diseases (including BYDV) and general microflora. Plant populations, shoot numbers and sowing depth were measured. Dry weight, leaf area, and N and K content of the above-ground crop and stem nitrate were measured on several occasions.

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79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

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

SOWDATE DRILLS	21 SEPT	13 OCT	MEAN
NORDSTEN	9.64	9.58	9.61
STANHAY	9.81	9.56	9.68
MEAN	9.72	9.57	9.65

TOTAL N DRILLS	160	250	MEAN
NORDSTEN	9.90	9.32	9.61
STANHAY	9.93	9.43	9.68
MEAN	9.91	9.38	9.65

TOTAL N SOWDATE	160	250	MEAN
21 SEPT	10.05	9.39	9.72
13 OCT	9.77	9.36	9.57
MEAN	9.91	9.38	9.65

N TIME DRILLS	A	M A M	MEAN
NORDSTEN	9.46	9.76	9.61
STANHAY	9.54	9.83	9.68
MEAN	9.50	9.79	9.65

N TIME SOWDATE	A	M A M	MEAN
21 SEPT	9.47	9.98	9.72
13 OCT	9.53	9.61	9.57
MEAN	9.50	9.79	9.65

N TIME TOTAL N	A	M A M	MEAN
160	9.81	10.02	9.91
250	9.19	9.57	9.38
MEAN	9.50	9.79	9.65

AUT PEST DRILLS	NONE	ALDICARB	MEAN
NORDSTEN	9.47	9.75	9.61
STANHAY	9.57	9.80	9.68
MEAN	9.52	9.77	9.65

AUT PEST SOWDATE	NONE	ALDICARB	MEAN
21 SEPT	9.55	9.90	9.72
13 OCT	9.49	9.65	9.57
MEAN	9.52	9.77	9.65

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79/R/WW/3

GRAIN DRY MATTER TONNES/HECTARE

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

AUT PEST TOTAL N	NONE	ALDICARB	MEAN
160	9.78	10.05	9.91
250	9.26	9.49	9.38
MEAN	9.52	9.77	9.65

AUT PEST N TIME	NONE	ALDICARB	MEAN
A	9.35	9.65	9.50
M A M	9.69	9.90	9.79
MEAN	9.52	9.77	9.65

APHICIDE DRILLS	NONE	PIRIMICA	MEAN
NORDSTEN	9.00	10.22	9.61
STANHAY	8.97	10.39	9.68
MEAN	8.99	10.30	9.65

APHICIDE SOWDATE	NONE	PIRIMICA	MEAN
21 SEPT	9.03	10.41	9.72
13 OCT	8.94	10.19	9.57
MEAN	8.99	10.30	9.65

APHICIDE TOTAL N	NONE	PIRIMICA	MEAN
160	9.42	10.41	9.91
250	8.56	10.19	9.38
MEAN	8.99	10.30	9.65

APHICIDE N TIME	NONE	PIRIMICA	MEAN
A	8.68	10.31	9.50
M A M	9.29	10.30	9.79
MEAN	8.99	10.30	9.65

APHICIDE AUT PEST	NONE	PIRIMICA	MEAN
NONE	8.77	10.27	9.52
ALDICARB	9.21	10.34	9.77
MEAN	8.99	10.30	9.65

FUNGCIDE DRILLS	NONE	CA+MA+TR	MEAN
NORDSTEN	9.12	10.10	9.61
STANHAY	9.20	10.16	9.68
MEAN	9.16	10.13	9.65

https://doi.org/10.23637/ERADOC-1-45

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GRAIN DRY MATTER TONNES/HECTARE

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

FUNGCIDE SOWDATE	NONE	CA+MA+TR	MEAN
21 SEPT	9.16	10.29	9.72
13 OCT	9.15	9.98	9.57
MEAN	9.16	10.13	9.65

FUNGCIDE TOTAL N	NONE	CA+MA+TR	MEAN
160	9.52	10.31	9.91
250	8.80	9.95	9.38
MEAN	9.16	10.13	9.65

FUNGCIDE N TIME	NONE	CA+MA+TR	MEAN
A	9.01	9.98	9.50
M A M	9.30	10.28	9.79
MEAN	9.16	10.13	9.65

FUNGCIDE AUT PEST	NONE	CA+MA+TR	MEAN
NONE	9.01	10.03	9.52
ALDICARB	9.31	10.24	9.77
MEAN	9.16	10.13	9.65

FUNGCIDE APHICIDE	NONE	CA+MA+TR	MEAN
NONE	8.61	9.37	8.99
PIRIMICA	9.71	10.90	10.30
MEAN	9.16	10.13	9.65

IRRIGATN DRILLS	NONE	FULL	MEAN
NORDSTEN	9.69	9.53	9.61
STANHAY	9.83	9.53	9.68
MEAN	9.76	9.53	9.65

IRRIGATN SOWDATE	NONE	FULL	MEAN
21 SEPT	9.84	9.61	9.72
13 OCT	9.68	9.45	9.57
MEAN	9.76	9.53	9.65

IRRIGATN TOTAL N	NONE	FULL	MEAN
160	9.99	9.84	9.91
250	9.54	9.22	9.38
MEAN	9.76	9.53	9.65

https://doi.org/10.23637/ERADOC-1-45

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GRAIN DRY MATTER TONNES/HECTARE

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

IRRIGATN	NONE	FULL	MEAN
N TIME			
A	9.66	9.34	9.50
M A M	9.87	9.72	9.79
MEAN	9.76	9.53	9.65

IRRIGATN	NONE	FULL	MEAN
AUT PEST			
NONE	9.56	9.48	9.52
ALDICARB	9.97	9.58	9.77
MEAN	9.76	9.53	9.65

IRRIGATN	NONE	FULL	MEAN
APHICIDE			
NONE	9.14	8.84	8.99
PIRIMICA	10.38	10.22	10.30
MEAN	9.76	9.53	9.65

IRRIGATN	NONE	FULL	MEAN
FUNGCIDE			
NONE	9.35	8.97	9.16
CA+MA+TR	10.17	10.09	10.13
MEAN	9.76	9.53	9.65

SOWDATE	21 SEPT		13 OCT	
TOTAL N	160	250	160	250
DRILLS				
NORDSTEN	10.01	9.28	9.79	9.37
STANHAY	10.10	9.51	9.76	9.35

SOWDATE	21 SEPT		13 OCT	
N TIME	A	M A M	A	M A M
DRILLS				
NORDSTEN	9.28	10.00	9.64	9.52
STANHAY	9.65	9.96	9.42	9.70

TOTAL N	160		250	
N TIME	A	M A M	A	M A M
DRILLS				
NORDSTEN	9.78	10.01	9.13	9.51
STANHAY	9.83	10.03	9.24	9.62

TOTAL N	160		250	
N TIME	A	M A M	A	M A M
SOWDATE				
21 SEPT	9.93	10.18	9.00	9.78
13 OCT	9.68	9.87	9.37	9.35

SOWDATE	21 SEPT		13 OCT	
AUT PEST	NONE	ALDICARB	NONE	ALDICARB
DRILLS				
NORDSTEN	9.48	9.80	9.46	9.69
STANHAY	9.62	9.99	9.51	9.60

https://doi.org/10.23637/ERADOC-1-45 *pp 17*

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GRAIN RY MATTER TONNES/HECTARE

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

TOTAL N	160		250	
AUT PEST	NONE	ALDICARB	NONE	ALDICARB
DRILLS				
NORDSTEN	9.72	10.08	9.22	9.42
STANHAY	9.83	10.03	9.30	9.56

TOTAL N	160		250	
AUT PEST	NONE	ALDICARB	NONE	ALDICARB
SOWDATE				
21 SEPT	9.86	10.25	9.24	9.55
13 OCT	9.69	9.86	9.28	9.44

AUT PEST	NONE	ALDICARB	NONE	ALDICARB
DRILLS				
NORDSTEN	9.29	9.62	9.65	9.87
STANHAY	9.40	9.67	9.73	9.92

N TIME	A		M A M	
AUT PEST	NONE	ALDICARB	NONE	ALDICARB
SOWDATE				
21 SEPT	9.19	9.74	9.90	10.06
13 OCT	9.50	9.56	9.48	9.74

N TIME	A		M A M	
AUT PEST	NONE	ALDICARB	NONE	ALDICARB
TOTAL N				
160	9.65	9.97	9.90	10.14
250	9.04	9.33	9.48	9.65

SOWDATE	21 SEPT		13 OCT	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
DRILLS				
NORDSTEN	9.00	10.29	9.01	10.14
STANHAY	9.07	10.54	8.88	10.24

TOTAL N	160		250	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
DRILLS				
NORDSTEN	9.35	10.44	8.65	9.99
STANHAY	9.48	10.39	8.47	10.39

TOTAL N	160		250	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
SOWDATE				
21 SEPT	9.50	10.60	8.56	10.22
13 OCT	9.33	10.22	8.56	10.16

N TIME	A		M A M	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
DRILLS				
NORDSTEN	8.73	10.19	9.28	10.24
STANHAY	8.64	10.43	9.30	10.35

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GRAIN DRY MATTER TONNES/HECTARE

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

N TIME	A		M A M	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
SOWDATE				
21 SEPT	8.57	10.36	9.50	10.47
13 OCT	8.80	10.26	9.09	10.13

N TIME	A		M A M	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
TOTAL N				
160	9.27	10.34	9.56	10.48
250	8.10	10.28	9.03	10.11

AUT PEST	NONE		ALDICARB	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
DRILLS				
NORDSTEN	8.84	10.10	9.17	10.33
STANHAY	8.70	10.43	9.24	10.35

AUT PEST	NONE		ALDICARB	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
SOWDATE				
21 SEPT	8.77	10.33	9.29	10.50
13 OCT	8.77	10.21	9.12	10.17

AUT PEST	NONE		ALDICARB	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
TOTAL N				
160	9.20	10.35	9.63	10.47
250	8.34	10.18	8.78	10.20

AUT PEST	NONE		ALDICARB	
APHICIDE	NONE	PIRIMICA	NONE	PIRIMICA
N TIME				
A	8.46	10.23	8.91	10.39
M A M	9.08	10.30	9.51	10.29

SOWDATE	21 SEPT		13 OCT	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
DRILLS				
NORDSTEN	9.10	10.19	9.14	10.02
STANHAY	9.23	10.39	9.17	9.94

TOTAL N	160		250	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
DRILLS				
NORDSTEN	9.49	10.30	8.74	9.90
STANHAY	9.54	10.32	8.86	10.01

TOTAL N	160		250	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
SOWDATE				
21 SEPT	9.56	10.55	8.76	10.03
13 OCT	9.47	10.08	8.84	9.88

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GRAIN DRY MATTER TONNES/HECTARE

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

N TIME	A		M A M	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
DRILLS				
NORDSTEN	8.95	9.97	9.28	10.24
STANHAY	9.07	10.00	9.33	10.33

N TIME	A		M A M	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
SOWDATE				
21 SEPT	8.93	10.01	9.39	10.57
13 OCT	9.09	9.96	9.21	10.00

N TIME	A		M A M	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
TOTAL N				
160	9.45	10.17	9.58	10.46
250	8.57	9.80	9.03	10.11

AUT PEST	NONE		ALDICARB	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
DRILLS				
NORDSTEN	8.94	10.00	9.29	10.21
STANHAY	9.07	10.06	9.33	10.26

AUT PEST	NONE		ALDICARB	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
SOWDATE				
21 SEPT	8.93	10.17	9.40	10.40
13 OCT	9.09	9.89	9.22	10.07

AUT PEST	NONE		ALDICARB	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
TOTAL N				
160	9.34	10.21	9.69	10.42
250	8.67	9.85	8.93	10.05

AUT PEST	NONE		ALDICARB	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
N TIME				
A	8.80	9.89	9.22	10.08
M A M	9.21	10.17	9.40	10.39

APHICIDE	NONE		PIRIMICA	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
DRILLS				
NORDSTEN	8.58	9.43	9.65	10.78
STANHAY	8.63	9.32	9.77	11.01

APHICIDE	NONE		PIRIMICA	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
SOWDATE				
21 SEPT	8.59	9.48	9.73	11.10
13 OCT	8.62	9.27	9.69	10.70

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GRAIN DRY MATTER TONNES/HECTARE

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

APHICIDE	NONE		PIRIMICA	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
TOTAL N				
160	9.08	9.75	9.95	10.88
250	8.13	9.00	9.47	10.91

APHICIDE	NONE		PIRIMICA	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
N TIME				
A	8.24	9.13	9.78	10.84
M A M	8.97	9.62	9.64	10.95

APHICIDE	NONE		PIRIMICA	
FUNGCIDE	NONE	CA+MA+TR	NONE	CA+MA+TR
AUT PEST				
NONE	8.32	9.22	9.69	10.84
ALDICARB	8.89	9.52	9.73	10.95

SOWDATE	21 SEPT		13 OCT	
IRRIGATN	NONE	FULL	NONE	FULL
DRILLS				
NORDSTEN	9.76	9.53	9.62	9.53
STANHAY	9.92	9.69	9.75	9.37

TOTAL N	160		250	
IRRIGATN	NONE	FULL	NONE	FULL
DRILLS				
NORDSTEN	9.98	9.82	9.40	9.24
STANHAY	10.00	9.86	9.67	9.19

TOTAL N	160		250	
IRRIGATN	NONE	FULL	NONE	FULL
SOWDATE				
21 SEPT	10.13	9.98	9.55	9.24
13 OCT	9.84	9.70	9.52	9.20

N TIME	A		M A M	
IRRIGATN	NONE	FULL	NONE	FULL
DRILLS				
NORDSTEN	9.57	9.34	9.80	9.72
STANHAY	9.74	9.33	9.93	9.73

N TIME	A		M A M	
IRRIGATN	NONE	FULL	NONE	FULL
SOWDATE				
21 SEPT	9.64	9.30	10.04	9.92
13 OCT	9.67	9.38	9.69	9.52

N TIME	A		M A M	
IRRIGATN	NONE	FULL	NONE	FULL
TOTAL N				
160	9.87	9.75	10.11	9.93
250	9.44	8.93	9.63	9.51

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GRAIN DRY MATTER TONNES/HECTARE

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

AUT PEST	NONE		ALDICARB	
IRRIGATN	NONE	FULL	NONE	FULL
DRILLS				
NORDSTEN	9.46	9.48	9.91	9.58
STANHAY	9.65	9.48	10.02	9.58

AUT PEST	NONE		ALDICARB	
IRRIGATN	NONE	FULL	NONE	FULL
SOWDATE				
21 SEPT	9.62	9.48	10.06	9.73
13 OCT	9.50	9.48	9.87	9.43

AUT PEST	NONE		ALDICARB	
IRRIGATN	NONE	FULL	NONE	FULL
TOTAL N				
160	9.84	9.72	10.14	9.97
250	9.28	9.24	9.79	9.19

AUT PEST	NONE		ALDICARB	
IRRIGATN	NONE	FULL	NONE	FULL
N TIME				
A	9.42	9.27	9.89	9.41
M A M	9.69	9.69	10.04	9.75

APHICIDE	NONE		PIRIMICA	
IRRIGATN	NONE	FULL	NONE	FULL
DRILLS				
NORDSTEN	9.10	8.91	10.28	10.15
STANHAY	9.18	8.77	10.49	10.29

APHICIDE	NONE		PIRIMICA	
IRRIGATN	NONE	FULL	NONE	FULL
SOWDATE				
21 SEPT	9.16	8.90	10.52	10.31
13 OCT	9.11	8.78	10.25	10.13

APHICIDE	NONE		PIRIMICA	
IRRIGATN	NONE	FULL	NONE	FULL
TOTAL N				
160	9.46	9.37	10.51	10.31
250	8.81	8.31	10.26	10.13

APHICIDE	NONE		PIRIMICA	
IRRIGATN	NONE	FULL	NONE	FULL
N TIME				
A	8.93	8.44	10.38	10.24
M A M	9.35	9.24	10.39	10.20

APHICIDE	NONE		PIRIMICA	
IRRIGATN	NONE	FULL	NONE	FULL
AUT PEST				
NONE	8.87	8.67	10.25	10.29
ALDICARB	9.41	9.01	10.52	10.15

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GRAIN DRY MATTER TONNES/HECTARE

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

FUNGCIDE	NONE		CA+MA+TR	
IRRIGATN	NONE	FULL	NONE	FULL
DRILLS				
NORDSTEN	9.33	8.90	10.05	10.16
STANHAY	9.37	9.03	10.30	10.03

FUNGCIDE	NONE		CA+MA+TR	
IRRIGATN	NONE	FULL	NONE	FULL
SOWDATE				
21 SEPT	9.38	8.94	10.30	10.27
13 OCT	9.32	8.99	10.05	9.91

FUNGCIDE	NONE		CA+MA+TR	
IRRIGATN	NONE	FULL	NONE	FULL
TOTAL N				
160	9.62	9.41	10.36	10.27
250	9.08	8.52	9.99	9.92

FUNGCIDE	NONE		CA+MA+TR	
IRRIGATN	NONE	FULL	NONE	FULL
N TIME				
A	9.31	8.71	10.00	9.97
M A M	9.38	9.23	10.35	10.22

FUNGCIDE	NONE		CA+MA+TR	
IRRIGATN	NONE	FULL	NONE	FULL
AUT PEST				
NONE	9.13	8.89	9.99	10.07
ALDICARB	9.57	9.04	10.36	10.12

FUNGCIDE	NONE		CA+MA+TR	
IRRIGATN	NONE	FULL	NONE	FULL
APHICIDE				
NONE	8.91	8.30	9.36	9.38
PIRIMICA	9.78	9.63	10.99	10.81

EXTRA	N 0	N 100	N 130	N 190	N 220	N 280	MEAN
	8.01	10.27	11.90	10.79	11.06	10.64	10.45

GRAND MEAN 9.68

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

SED FOR ALL TABLES EXCEPT EXTRA

ONE FACTOR TABLE	0.096
TWO FACTOR TABLES	0.135
THREE FACTOR TABLES	0.191

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

STRATUM	DF	SE	CV%
WP	35	0.541	5.6

GRAIN MEAN DM% 85.1 PLOT AREA HARVESTED 0.00204

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79/W/WW/3

WINTER WHEAT

GROWTH AND YIELD ON A CONTRASTED SITE

Object: To study on a contrasted site the effects of some of the factors tested in 79/R/WW/3 Factors Limiting Yield and to determine the extent to which differences between the sites can be eliminated by appropriate combinations of the factors - Woburn Butt Close III.

Sponsors: P.J. Welbank, F.V. Widdowson.

Design: Half replicate of 2^6, arranged as 16 whole plots split into 2, plus 2 extra plots split into 2.

Whole plot dimensions: 3.25 x 30.5.

Treatments: Combinations of:-

Whole plots

1.	DRILLS	Drills, sowing seed at 380 seeds per m^2 in rows 10 cm (4 in) apart:
	NORDSTEN	Nordsten drill spacing seed irregularly within the row
	STANHAY	Stanhay precision drill
2.	SOWDATE	Dates of sowing:
	22 SEPT	22 September, 1978
	12 OCT	12 October
3.	AUT PEST	Autumn pesticide:
	NONE	None
	ALDICARB	Aldicarb at 5 kg worked in to seedbed

Sub plots

4.	TOTAL N	Total amount of nitrogen fertiliser:
	205	
	295	
5.	N TIME	Times of applying nitrogen fertiliser:
	A	All applied on 5 Apr, 1979
	M A M	40 kg of total applied on 12 Mar, 45 kg applied on 18 May, remainder on 5 Apr
6.	IRRIGATN	Irrigation:
	NONE	None
	FULL	Full (120 mm) to lessen a deficit of 30 mm to 12 mm

plus two extra plots split into two, both whole plots identical and sown by Stanhay drill on 22 September, all N applied on 5 Apr, given aldicarb and full irrigation, testing rates of nitrogen fertiliser (kg N):

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EXTRA
N 0
N 160
N 250
N 340

Irrigation was applied as follows (mm water):

22 June	10
28 June	10
2 July	10
5 July	10
9 July	10
12 July	10
16 July	10
19 July	10
23 July	10
26 July	10
30 July	10
6 Aug	10
Total	120

Standard applications: Manures: (0:14:28) at 350 kg. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' at 3.5 kg on two occasions, on the first in 120 l and the second in 300 l). Growth regulator: Chlormequat at 1.4 kg in 340 l. Fungicide: Carbendazim, tridemorph and maneb ('Cosmic' at 4.0 kg in 340 l) on two occasions. Aphicide: Pirimicarb at 0.14 kg in 340 l.

Seed: Hustler, sown at 174 kg.

Cultivations, etc.:- Heavy spring-tine cultivated, PK applied: 13 Sept, 1978. Aldicarb applied for SOW DATE 22 SEPT and all these plots rotary cultivated: 21 Sept. Aldicarb applied for SOW DATE 12 OCT and all these plots rotary cultivated: 12 Oct. Weedkillers applied: 28 Dec. First N applied: 12 Mar, 1979. Second N applied: 5 Apr. Growth regulator applied to early sowing: 18 Apr. Weedkillers applied: 2 May. Growth regulator applied to late sowing: 8 May. Third N applied: 18 May. Fungicide applied twice: 24 May, 19 June. Aphicide applied: 26 June. Combine harvested: 31 Aug. Previous crops: Beans 1977, early potatoes 1978.

NOTE: Measurements were made of plant and shoot numbers, dry weight of tops and ears, leaf areas and nitrate and potassium content four times during the growing season. Weekly measurements were made for soil moisture and plant moisture stress (between April and August). Disease assessments were made during the growing season. Soil samples were taken in February and April to determine their N content.

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GRAIN TONNES/HECTARE

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

SOWDATE DRILLS	22 SEPT	12 OCT	MEAN
NORDSTEN	7.88	7.66	7.77
STANHAY	8.13	7.38	7.75
MEAN	8.00	7.52	7.76

AUT PEST DRILLS	NONE	ALDICARB	MEAN
NORDSTEN	7.40	8.14	7.77
STANHAY	7.46	8.05	7.75
MEAN	7.43	8.10	7.76

AUT PEST SOWDATE	NONE	ALDICARB	MEAN
22 SEPT	7.48	8.53	8.00
12 OCT	7.38	7.66	7.52
MEAN	7.43	8.10	7.76

TOTAL N DRILLS	205	295	MEAN
NORDSTEN	7.76	7.78	7.77
STANHAY	7.75	7.76	7.75
MEAN	7.76	7.77	7.76

TOTAL N SOWDATE	205	295	MEAN
22 SEPT	7.91	8.09	8.00
12 OCT	7.60	7.45	7.52
MEAN	7.76	7.77	7.76

TOTAL N AUT PEST	205	295	MEAN
NONE	7.43	7.42	7.43
ALDICARB	8.08	8.11	8.10
MEAN	7.76	7.77	7.76

N TIME DRILLS	A	M A M	MEAN
NORDSTEN	7.70	7.84	7.77
STANHAY	7.58	7.93	7.75
MEAN	7.64	7.89	7.76

N TIME SOWDATE	A	M A M	MEAN
22 SEPT	7.95	8.06	8.00
12 OCT	7.33	7.71	7.52
MEAN	7.64	7.89	7.76

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GRAIN TONNES/HECTARE

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

N TIME	A	M A M	MEAN
AUT PEST			
NONE	7.35	7.51	7.43
ALDICARB	7.93	8.26	8.10
MEAN	7.64	7.89	7.76

N TIME	A	M A M	MEAN
TOTAL N			
205	7.70	7.81	7.76
295	7.57	7.96	7.77
MEAN	7.64	7.89	7.76

IRRIGATN	NONE	FULL	MEAN
DRILLS			
NORDSTEN	7.21	8.33	7.77
STANHAY	7.13	8.38	7.75
MEAN	7.17	8.35	7.76

IRRIGATN	NONE	FULL	MEAN
SOWDATE			
22 SEPT	7.28	8.72	8.00
12 OCT	7.06	7.99	7.52
MEAN	7.17	8.35	7.76

IRRIGATN	NONE	FULL	MEAN
AUT PEST			
NONE	6.84	8.01	7.43
ALDICARB	7.50	8.69	8.10
MEAN	7.17	8.35	7.76

IRRIGATN	NONE	FULL	MEAN
TOTAL N			
205	7.16	8.35	7.76
295	7.18	8.35	7.77
MEAN	7.17	8.35	7.76

IRRIGATN	NONE	FULL	MEAN
N TIME			
A	6.99	8.29	7.64
M A M	7.35	8.42	7.89
MEAN	7.17	8.35	7.76

EXTRA	N 0	N 160	N 250	N 340	MEAN
	3.87	7.95	9.12	8.14	7.27

GRAND MEAN 7.71

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79/W/WW/3

GRAIN TONNES/HECTARE

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

TABLE	EXTRA	DRILLS	SOWDATE	AUT PEST
SED	0.786	0.183	0.185	0.186

TABLE	TOTAL N	N TIME	IRRIGATN	DRILLS SOWDATE
SED	0.210	0.201	0.185	0.258

TABLE	DRILLS AUT PEST	SOWDATE AUT PEST	DRILLS TOTAL N	SOWDATE TOTAL N
SED	0.260	0.264	0.298	0.285

TABLE	AUT PEST TOTAL N	DRILLS N TIME	SOWDATE N TIME	AUT PEST N TIME
SED	0.291	0.272	0.281	0.294

TABLE	TOTAL N N TIME	DRILLS IRRIGATN	SOWDATE IRRIGATN	AUT PEST IRRIGATN
SED	0.301	0.258	0.261	0.260

TABLE	TOTAL N IRRIGATN	N TIME IRRIGATN
SED	0.288	0.285

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

STRATUM	DF	SE	CV%
WP	8	0.496	6.4

MEAN DM% 86.8

SUB PLOT AREA HARVESTED 0.00125

https://doi.org/10.23637/ERADOC-1-45

79/R/WW/4

WINTER WHEAT

SEED RATES AND DIVIDED N DRESSINGS

Object: To study the effects of seed rates and rates and times of applying nitrogen fertiliser on the growth and yield of winter wheat - Gt. Harpenden II.

Sponsors: J. McEwen, R. Moffitt.

Design: 2 randomised blocks of 2 x 4 x 3.

Whole plot dimensions: 4.26 x 9.14.

Treatments: All combinations of:-

1. SEEDRATE — Seed rate (kg):

   100
   200

2. TOTAL N — Total nitrogen fertiliser (kg N):

   75
   100
   125
   150

3. N TIME — Times of applying nitrogen fertiliser:

MA	25 kg N of the total applied 23 Mar, remainder 17 Apr
A	All applied 17 Apr
MAJ	25 kg N of the total applied 23 Mar, 25 kg N applied 18 June, remainder 17 Apr

Basal applications: Manures: (0:20:20) at 310 kg. Weedkillers: Dicamba, mecoprop and MCPA (as 'Banlene Plus' at 4.2 kg in 220 l). Fungicides: Triadimefon at 0.13 kg in 220 l. Growth regulator: Chlormequat at 1.7 kg in 220 l.

Seed: Flanders.

Cultivations, etc.:- Ploughed: 11 Oct, 1978. Rotary harrowed, PK applied: 16 Oct. Rotary harrowed: 17 Oct. Seed sown: 18 Oct. Growth regulator applied: 3 May. Weedkillers applied: 8 May. Fungicide applied: 27 June. Combine harvested: 29 Aug. Previous crops: Barley 1977, beans 1978.

NOTES: (1) Nitrate contents in stems were estimated at intervals during the season.
(2) Tiller counts were made in April and ear counts in July.
(3) 1000 grain weights were measured and grain was analysed for N percentage.

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79/R/WW/4

GRAIN TONNES/HECTARE

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

TOTAL N / SEEDRATE	75	100	125	150	MEAN
100	5.89	6.58	6.54	6.72	6.43
200	6.45	6.71	7.50	7.50	7.04
MEAN	6.17	6.64	7.02	7.11	6.74

N TIME / SEEDRATE	MA	A	MAJ	MEAN
100	6.79	6.47	6.05	6.43
200	6.92	7.29	6.91	7.04
MEAN	6.85	6.88	6.48	6.74

N TIME / TOTAL N	MA	A	MAJ	MEAN
75	6.86	6.37	5.27	6.17
100	6.38	6.77	6.77	6.64
125	7.07	7.23	6.77	7.02
150	7.10	7.13	7.10	7.11
MEAN	6.85	6.88	6.48	6.74

SEEDRATE	N TIME / TOTAL N	MA	A	MAJ
100	75	6.60	6.06	5.00
	100	6.73	6.56	6.44
	125	6.77	6.76	6.10
	150	7.06	6.48	6.64
200	75	7.12	6.68	5.55
	100	6.03	6.98	7.11
	125	7.37	7.70	7.43
	150	7.14	7.79	7.56

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

TABLE	SEEDRATE	TOTAL N	N TIME	SEEDRATE TOTAL N
SED	0.167	0.237	0.205	0.334

TABLE	SEEDRATE N TIME	TOTAL N N TIME	SEEDRATE TOTAL N N TIME
SED	0.290	0.410	0.579

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

STRATUM	DF	SE	CV%
BLOCK.WP	23	0.579	8.6

MEAN DM% 83.8

PLOT AREA HARVESTED 0.00290

https://doi.org/10.23637/ERADOC-1-45

79/R/WW/5

WINTER WHEAT

FUNGICIDES

Object: To study the effects of a range of fungicides and two methods of application on the incidence of diseases and on the yield of winter wheat - Webbs.

Sponsors: J.F. Jenkyn, R.D. Prew.

Design: 3 randomised blocks of 14 plots.

Whole plot dimensions: 2.13 x 13.4.

Treatments:

FUNGCIDE	Fungicides and methods of application:
NONE	None
BAS389 S	'BAS 389' as a seed dressing at 1 g a.i. per kg of seed
BENOD F	Benodanil as a foliar spray at 1.1 kg
BTS S	'BTS 40542' as a seed dressing at 0.2 g a.i. per kg of seed
BTS F	'BTS 40542' as a foliar spray at 0.4 kg
CARBOX S	Carboxin as a seed dressing at 1.5 g per kg of seed
CARBOX F	Carboxin as a foliar spray at 1.1 kg
EL228 S	'EL 228' as a seed dressing at 0.2 g a.i. per kg of seed
EL228 F	'EL 228' as a foliar spray at 0.04 kg a.i.
H719 S	'H 719' as a seed dressing at 1.5 g a.i. per kg of seed
H719 F	'H 719' as a foliar spray at 1.1 kg a.i.
OM S	Organo-mercury as a seed dressing ('Agrosan GN' at 2.2 g per kg of seed)
PP296 F	'PP 296' as a foliar spray at 0.125 kg
TRIAD S	Triadimefon as a seed dressing at 0.5 g per kg of seed

NOTES: (1) All seed dressing treatments (except organo-mercury) were sown at 220 kg. All remaining treatments were sown at 190 kg.
(2) Foliar sprays were applied on 1 June, 1979 in 340 l.

Basal applications: Manures: (10:23:23) at 250 kg. 'Nitro-Chalk' at 460 kg. Weedkillers: Paraquat at 0.42 kg ion in 220 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 0.25 kg in 220 l).

Seed: Kador.

Cultivations, etc.:- Deep-tine cultivated twice: 31 Aug, 1978 and 1 Sept. Heavy spring-tine cultivated: 14 Sept. NPK applied: 17 Oct. Paraquat applied: 18 Oct. Rolled and disc harrowed: 23 Oct. Seed sown: 24 Oct. N applied: 19 Apr, 1979. 'Brittox' applied: 14 May. Combine harvested: 31 Aug. Previous cropping: Wheat 1977, barley 1978.

NOTE: Foot and root rots were assessed in spring and summer. Leaf diseases were assessed in late summer.

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79/R/WW/5

GRAIN TONNES/HECTARE

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

FUNGCIDE	
NONE	4.77
BAS389 S	5.13
BENOD F	4.50
BTS S	5.65
BTS F	5.38
CARBOX S	5.16
CARBOX F	4.85
EL228 S	5.43
EL228 F	4.89
H719 S	4.68
H719 F	5.11
OM S	5.55
PP296 F	5.43
TRIAD S	5.68
MEAN	5.16

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

TABLE	FUNGCIDE
SED	0.407

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

STRATUM	DF	SE	CV%
BLOCK.WP	26	0.498	9.7

GRAIN MEAN DM% 86.1

PLOT AREA HARVESTED 0.00195

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79/R/WW/6

WINTER WHEAT

EFFECTS OF SEPTORIA

Object: To study the effects of a range of treatments on the incidence of Septoria and on the yield of winter wheat - Gt. Harpenden II.

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

Design: 2 randomised blocks of 8, all treatment combinations duplicated in each block.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

1. SEP SEED — Septoria infection of seed:

   NONE
   INFECTED

2. SEEDRESS — Seed dressing:

   NONE — None
   ORG MERC — Organo-mercury (as 'Agrosan GN' at 2.2 g per kg seed)

3. SEP STRW — Septoria infected of straw applied to seedbed on 17 Oct, 1978:

   NONE
   INFECTED

NOTES: (1) An intended test of foliar fungicide was not applied.
(2) Infected straw was applied to plots at 600 kg per ha.
(3) All plots were separated at their sides by 4.27 m and at their ends by 9.14 m. Separations were sown to winter barley, variety Athene, seed dressed with ethirimol.
(4) Irrigation was applied to the whole experimental area once a week, overnight, at 5 mm per occasion, when there had been negligible rain in the preceding week. It was applied on 20 June, 27 June, 4 July, 11 July, 18 July, 25 July.

Basal applications: Manures: (0:20:20) at 310 kg. 'Nitro-Chalk' at 500 kg. Weedkillers: Dicamba with mecoprop and MCPA (as 'Banlene Plus' at 4.2 kg in 220 l). Growth regulator: Chlormequat at 1.7 kg in 220 l.

Seed: Atou, sown at 190 kg.

Cultivations, etc.:- Ploughed: 11 Oct, 1978. Rotary harrowed, PK applied: 16 Oct. Power harrowed: 17 Oct. Seed sown: 18 Oct. N applied: 3 May, 1979. Weedkillers applied: 8 May. Growth regulator applied: 1 June. Winter barley separations harvested: 15 Aug. Plots combine harvested: 29 Aug. Previous cropping: Barley 1977, beans 1978.

NOTE: Seedling and leaf infection by Septoria was assessed periodically during the season.

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79/R/WW/6

GRAIN TONNES/HECTARE

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

SEEDRESS	NONE	ORG MERC	MEAN
SEP SEED			
NONE	6.33	6.22	6.27
INFECTED	6.13	6.29	6.21
MEAN	6.23	6.25	6.24

SEP STRW	NONE	INFECTED	MEAN
SEP SEED			
NONE	6.37	6.17	6.27
INFECTED	6.20	6.22	6.21
MEAN	6.29	6.20	6.24

SEP STRW	NONE	INFECTED	MEAN
SEEDRESS			
NONE	6.33	6.13	6.23
ORG MERC	6.24	6.26	6.25
MEAN	6.29	6.20	6.24

SEEDRESS	NONE		ORG MERC	
SEP STRW	NONE	INFECTED	NONE	INFECTED
SEP SEED				
NONE	6.46	6.19	6.28	6.15
INFECTED	6.19	6.07	6.21	6.37

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

TABLE	SEP SEED	SEEDRESS	SEP STRW	SEP SEED SEEDRESS
SED	0.155	0.155	0.155	0.219

TABLE	SEP SEED SEP STRW	SEEDRESS SEP STRW	SEP SEED SEEDRESS SEP STRW
SED	0.219	0.219	0.309

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

STRATUM	DF	SE	CV%
BLOCK.WP	23	0.438	7.0

GRAIN MEAN DM% 85.0

PLOT AREA HARVESTED 0.00195

https://doi.org/10.23637/ERADOC-1-45

79/R/WW/7

WINTER WHEAT

EFFECTS OF SULPHUR

Object: To study the effects of sulphur on amino acid content, flour quality and yield of winter wheat - Webbs.

Sponsors: B.J. Miflin, M.A. Kirkman.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 2.66 x 7.62.

Treatments:

N S	Rates and times of nitrogen and sulphur fertilisers (kg element): Nitrogen		Sulphur, as potassium sulphate	
	19 Apr as 'Nitro-Chalk'	29 June as urea	3 May	29 June
NE0 S00	120	0	0	0
NE0 SE0	120	0	20	0
NEL S00	120	80	0	0
NEL SE0	120	80	20	0
NEL S0L	120	80	0	20
NEL SEL	120	80	20	20

NOTE: Urea and potassium sulphate were applied, either singly or together, in 1000 l.

Basal applications: Manures: (10:23:23) at 250 kg. Weedkillers: Paraquat at 0.42 kg ion in 220 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 2.5 kg in 220 l).

Seed: Flinor, sown at 190 kg.

Cultivations, etc.:- Deep-tine cultivated twice: 31 Aug, 1978 and 1 Sept. Heavy spring-tine cultivated: 14 Sept. NPK applied: 17 Oct. Paraquat applied: 18 Oct. Disc harrowed: 23 Oct. Seed sown: 25 Oct. 'Brittox' applied: 14 May. Combine harvested: 30 Aug. Previous cropping: Barley 1977, barley 1978.

NOTE: The grain was tested for bread making quality, N and sulphur content.

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79/R/WW/7

GRAIN TONNES/HECTARE

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

	N S
NEO SOO	5.24
NEO SEO	5.39
NEL SOO	5.27
NEL SEO	5.26
NEL SOL	5.60
NEL SEL	5.15
MEAN	5.32

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

TABLE	N S
SED	0.249

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.306	5.7

GRAIN MEAN DM% 87.2

PLOT AREA HARVESTED 0.00203

https://doi.org/10.23637/ERADOC-1-45

79/R/WW/8

WINTER WHEAT

INTEGRATED PEST CONTROL

Object: To study the effects of chemical and biological pest control treatments on the incidence of pests and beneficial insects and on yield of winter wheat - Stackyard.

Sponsors: W. Powell, R. Bardner, G.J.W. Dean, C.A. Edwards, J.R. Lofty, K.E. Fletcher, J.W. Stephenson, A. Dewar, N. Wilding, R.T. Plumb.

Design: 3 randomised blocks of 4 plots.

Whole plot dimensions: 19.2 x 19.2.

Treatments:

TREATMNT	Chemical and biological treatments:
NONE	None
APHICIDE	Aphicide - Pirimicarb at 0.14 kg in 550 l on 26 June, 1979
BIOLOGIC	Biological control of aphids by the release of 14 Sitobion avenae and 12 Metopolophium dirhodum per square metre, both species infected with Entomophthora aphidis, on 22 June, 1979
MULTCHEM	Multiple chemical treatments: Aldicarb at 5 kg to the seedbed on 17 Oct, 1978 Metaldehyde at 31 kg on 31 Oct Omethoate at 0.2 kg in 280 l on 15 May, 1979

Basal applications: Manures: (10:23:23) at 250 kg, combine drilled. 'Nitro-Chalk' at 500 kg. Autumn weedkiller: Chlortoluron at 5.6 kg in 220 l. Spring weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Flanders, undressed, sown at 190 kg.

Cultivations, etc.:- Ploughed: 12 Oct, 1978. Disc harrowed: 16 Oct. Rotary harrowed: 18 Oct. Seed sown: 19 Oct. Autumn weedkiller applied: 20 Oct. N applied: 27 Apr, 1979. Spring weedkiller applied: 15 May. Combine harvested: 30 Aug. Previous cropping: Wheat 1977, spring oats 1978.

NOTE: Aphid counts were made weekly between June and early August and Entomophthora infection was assessed. Slugs and stem boring insects were counted and the incidence of barley yellow dwarf virus assessed. Polyphagous predators and aphid-specific predators and parasites were sampled regularly between late May and early August.

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79/R/WW/8

GRAIN TONNES/HECTARE

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

TREATMNT	NONE	APHICIDE	BIOLOGIC	MULTCHEM	MEAN
	7.21	7.14	7.03	7.44	7.20

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

TABLE	TREATMNT
SED	0.241

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.296	4.1

GRAIN MEAN DM% 84.3

PLOT AREA HARVESTED 0.00410

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79/R/WW/9

WINTER WHEAT

PARASITES AND PREDATORS OF INSECT PESTS

Object: To study the effects of two insecticides, applied separately and together, on the parasites and predators and on the yield of winter wheat - Stackyard.

Sponsors: R. Bardner, J.R. Lofty, K.E. Fletcher.

Design: 3 randomised blocks of 4 plots.

Whole plot dimensions: 10.7 x 21.4.

Treatments: All combinations of:-

1. INS E — Insecticide applied early:

NONE	None
ALDICARB	Aldicarb at 5 kg as 10% granules to the seedbed on 17 Oct, 1978

2. INS L — Insecticide applied late:

NONE	None
CHLORPYR	Chlorpyrifos at 1.17 kg as a foliar spray in 550 l on 15 May, 1979

Basal applications: Manures: (10:23:23) at 250 kg, combine drilled. 'Nitro-Chalk' at 500 kg. Autumn weedkiller: Chlortoluron at 5.6 kg in 220 l. Spring weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Flanders, sown at 190 kg.

Cultivations, etc.:- Ploughed: 12 Oct, 1978. Disc harrowed: 16 Oct. Rotary harrowed, seed sown: 18 Oct. Autumn weedkiller applied: 20 Oct. N applied: 27 Apr, 1979. Spring weedkiller applied: 15 May. Combine harvested: 29 Aug. Previous cropping: Fallow 1977, wheat 1978.

NOTE: Incidence of ground beetles was assessed weekly, of wheat blossom midge larvae and pupae in soil in November and December and all arthropods in soil from April until harvest. Incidence of shoot borers was assessed in April, adult wheat blossom midge and other flying insects in June and thrips in July.

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79/R/WW/9

GRAIN TONNES/HECTARE

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

INS L / INS E	NONE	CHLORPYR	MEAN
NONE	6.52	6.77	6.65
ALDICARB	6.60	7.28	6.94
MEAN	6.56	7.02	6.79

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

TABLE	INS E	INS L	INS E INS L
SED	0.128	0.128	0.181

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.221	3.3

GRAIN MEAN DM% 86.3

PLOT AREA HARVESTED 0.00607

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79/S/WW/1

WINTER WHEAT

RATES AND TIMES OF N AND FUNGICIDE

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

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

Design: Half replicate of 4 x 2^4 plus 8 extra plots.

Whole plot dimensions: 2.74 x 6.40.

Treatments: Combinations of:-

1. N AUTUMN		Nitrogen fertiliser in autumn (4 Oct, 1978):
	0	None
	IBDU 1	Isobutylidene diurea at 50 kg N
2. N SPRING		Nitrogen fertiliser in spring (18 Apr, 1979):
	0	None
	NC 1	'Nitro-Chalk 25% N' at 50 kg N
	NC 2	'Nitro-Chalk 25% N' at 100 kg N
	NC 3	'Nitro-Chalk 25% N' at 150 kg N
3. N SUMMER		Nitrogen fertiliser in summer:
	0	None
	AG 1	'Agsol 26% N' at 50 kg N foliar spray, half on 12 June, half on 5 July
4. FUNGCIDE(1)		Fungicide:
	0	None
	BN+CA+MA	Benomyl on 16 May, carbendazim + maneb on 12 June and on 5 July
5. FUNGCIDE(2)		Fungicide:
	0	None
	BENODANI	Benodanil on 12 June and on 5 July

plus four extra treatments (duplicated), all given FUNGCIDE(1) and FUNGCIDE(2):

EXTRA

NCA1NCD2	'Nitro-Chalk' in autumn at 50 kg N, 'Nitro-Chalk' in spring/summer at 100 kg N, dressing divided 1/5 on 6 Mar, 3/5 on 18 Apr, and 1/5 on 16 May
NCA1NCD3	As previous treatment but 150 kg N
IBA1NCD2	Isobutylidene diurea in autumn at 50 kg N, 'Nitro-Chalk' in spring/summer at 100 kg N dressing divided as above
IBA1NCD3	As previous treatment but 150 kg N.

https://doi.org/10.23637/ERADOC-1-45

79/S/WW/1

NOTE: Test fungicides were applied in 280 l. Rates: Benomyl at 0.28 kg, carbendazim at 0.25 kg with maneb at 1.6 kg, benodanil at 1.2 kg.

Basal applications: Manures: (0:14:28) at 190 kg. (0:20:20) at 380 kg, combine drilled. Autumn weedkiller: Isoproturon at 2.5 kg in 220 l. Spring weedkiller: Ioxynil at 0.42 kg and mecoprop at 1.3 kg in 220 l applied with the growth regulator. Fungicide: Tridemorph at 0.53 kg in 280 l. Growth regulator: Chlormequat at 1.7 kg. Aphicide: Pirimicarb at 0.14 kg in 280 l.

Seed: Maris Huntsman, sown at 180 kg.

Cultivations, etc.:- PK applied: 19 Sept, 1978. Seed sown and autumn test N applied: 4 Oct. Autumn weedkiller applied: 5 Oct. Spring weedkiller and growth regulator applied: 15 May, 1979. Basal fungicide applied: 16 May. Basal insecticide applied: 5 July. Harvested: 21 Aug.

NOTE: Plots were assessed for leaf diseases, numbers of ears, and N percentage in grains.

79/S/WW/1

GRAIN TONNES/HECTARE

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

N SPRING	0	NC 1	NC 2	NC 3	MEAN
N AUTUMN					
0	5.16	7.19	7.98	8.02	7.09
IBDU 1	6.01	7.70	8.29	8.06	7.52
MEAN	5.59	7.45	8.13	8.04	7.30

N SUMMER	0	AG 1	MEAN
N AUTUMN			
0	6.96	7.22	7.09
IBDU 1	7.39	7.64	7.52
MEAN	7.18	7.43	7.30

N SUMMER	0	AG 1	MEAN
N SPRING			
0	5.36	5.82	5.59
NC 1	7.24	7.65	7.45
NC 2	8.15	8.12	8.13
NC 3	7.95	8.14	8.04
MEAN	7.18	7.43	7.30

FUNGCIDE(1)	0	BN+CA+MA	MEAN
N AUTUMN			
0	6.97	7.22	7.09
IBDU 1	7.32	7.71	7.52
MEAN	7.14	7.46	7.30

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79/S/WW/1

GRAIN TONNES/HECTARE

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

FUNGCIDE(1)	0	BN+CA+MA	MEAN
N SPRING			
0	5.64	5.54	5.59
NC 1	7.21	7.68	7.45
NC 2	7.91	8.36	8.13
NC 3	7.82	8.27	8.04
MEAN	7.14	7.46	7.30

FUNGCIDE(1)	0	BN+CA+MA	MEAN
N SUMMER			
0	7.06	7.29	7.18
AG 1	7.23	7.64	7.43
MEAN	7.14	7.46	7.30

FUNGCIDE(2)	0	BENODANI	MEAN
N AUTUMN			
0	7.12	7.07	7.09
IBDU 1	7.51	7.52	7.52
MEAN	7.31	7.30	7.30

FUNGCIDE(2)	0	BENODANI	MEAN
N SPRING			
0	5.53	5.64	5.59
NC 1	7.47	7.42	7.45
NC 2	8.17	8.10	8.13
NC 3	8.07	8.02	8.04
MEAN	7.31	7.30	7.30

FUNGCIDE(2)	0	BENODANI	MEAN
N SUMMER			
0	7.16	7.19	7.18
AG 1	7.46	7.40	7.43
MEAN	7.31	7.30	7.30

FUNGCIDE(2)	0	BENODANI	MEAN
FUNGCIDE(1)			
0	7.18	7.11	7.14
BN+CA+MA	7.44	7.49	7.46
MEAN	7.31	7.30	7.30

EXTRA	NCA1NCD2	NCA1NCD3	IBA1NCD2	IBA1NCD3	MEAN
	8.62	8.54	8.41	8.27	8.46

GRAND MEAN 7.54

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GRAIN TONNES/HECTARE

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

TABLE	N AUTUMN	N SPRING	N SUMMER	FUNGCIDE(1)
SED	0.092	0.131	0.092	0.092

TABLE	FUNGCIDE(2)	N AUTUMN N SPRING	N AUTUMN N SUMMER	N SPRING N SUMMER
SED	0.092	0.185	0.131	0.185

TABLE	N AUTUMN FUNGCIDE(1)	N SPRING FUNGCIDE(1)	N SUMMER FUNGCIDE(1)	N AUTUMN FUNGCIDE(2)
SED	0.131	0.185	0.131	0.131

TABLE	N SPRING FUNGCIDE(2)	N SUMMER FUNGCIDE(2)	FUNGCIDE(1) FUNGCIDE(2)	EXTRA
SED	0.185	0.131	0.131	0.262

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

STRATUM	DF	SE	CV%
WP	10	0.262	3.5

GRAIN MEAN DM% 80.2

PLOT AREA HARVESTED 0.00098

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79/R/WS/1

SPRING WHEAT

FUNGICIDES AND GRAIN MICROFLORA

Object: To study the effects of a range of fungicides applied at a range of times on the yield, quality and grain microflora of spring wheat - Whittlocks.

Sponsor: J. Lacey.

Design: 2 randomised blocks of 24 plots.

Whole plot dimensions: 4.27 x 13.1.

Treatments: All combinations of:-

1. FUNGCIDE — Broad spectrum fungicides:

CAPTAFOL	Captafol at 1.4 kg
CARB+MAN	Carbendazim at 0.25 kg + maneb at 1.6 kg
BENOMYL	Benomyl (see Note (2))

2. APP TIME — Application times of broad spectrum fungicides:

	3 July	11 July	3 Aug
NONE	None	None	None
E	Sprayed	None	None
M	None	Sprayed	None
L	None	None	Sprayed
E+M	Sprayed	Sprayed	None
E+L	Sprayed	None	Sprayed
M+L	None	Sprayed	Sprayed
E+M+L	Sprayed	Sprayed	Sprayed

NOTES: (1) Treatment sprays were applied in 340 l.
(2) First benomyl sprays were applied at 1.1 kg in error. The intended rate of 0.28 kg was used for both later applications.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkillers: Bromoxynil and ioxynil (as 'Oxytril CM' at 1.4 kg) and mecoprop at 1.7 kg in 220 l.

Seed: Highbury, sown at 190 kg.

Cultivations, etc.:- Deep-tine cultivated twice: 31 Oct, 1978 and 2 Nov. Spring-tine cultivated, seed sown: 20 Apr, 1979. Weedkillers applied: 4 June. Combine harvested: 6 Sept. Previous cropping: Winter oats 1977, potatoes 1978.

NOTE: Grain microflora were assessed at fortnightly intervals after heading. Thousand grain weights were measured, and grain was assessed for germination and seedling growth.

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GRAIN TONNES/HECTARE

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

APP TIME / FUNGCIDE	E	M	L	E+M	E+L	M+L	E+M+L	MEAN
CAPTAFOL	5.51	5.61	5.82	5.50	5.73	5.55	5.89	5.66
CARB+MAN	5.54	5.66	5.32	5.80	5.57	5.71	5.61	5.60
BENOMYL	5.82	5.54	5.33	5.92	5.86	5.35	6.13	5.71
MEAN	5.62	5.60	5.49	5.74	5.72	5.54	5.87	5.66

APP TIME NONE 5.36

GRAND MEAN 5.62

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

TABLE	FUNGCIDE	APP TIME	FUNGCIDE APP TIME
SED	0.129	0.197	0.341

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

STRATUM	DF	SE	CV%
BLOCK.WP	25	0.341	6.1

GRAIN MEAN DM% 83.2

PLOT AREA HARVESTED 0.00195

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