ROTHAMSTED RESEARCH

Yields of the Field Experiments 1978

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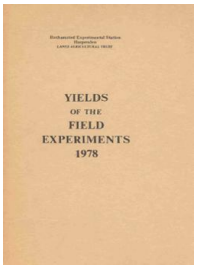

Annuals - Wheat

Rothamsted Research

Rothamsted Research (1979) *Annuals - Wheat ;* Yields Of The Field Experiments 1978, pp 336 - 378 **- DOI: https://doi.org/10.23637/ERADOC-1-30**

78/R/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) - Great Harpenden I (pathogen free RH) and Little Hoos (pathogen infected RD).

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

Design: 4 randomised blocks of 9 plots split into 4 (RD) and 1 block of 9 plots split into 4 (RH).

Whole plot dimensions: 4.27 x 33.2 (RH)
4.27 x 27.1 (RD)

Treatments: All combinations of:-

Whole plots

1. VARIETY — Varieties:

ARMADA	Armada
ATOU	Atou
FLANDERS	Flanders
HOBBIT	Hobbit
KADOR	Kador
MARDLER	Mardler
HUNTSMAN	Maris Huntsman
KINSMAN	Maris Kinsman
SPORTSMN	Sportsman

Sub plots

2. N — Nitrogen fertiliser (kg N):

(RH)	(RD)	Gt. Harpenden I (RH)	Little Hoos (RD)
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

NOTES: (1) Three blocks were sown on Gt. Harpenden I (RH). Two were waterlogged during the winter and were abandoned.
(2) An identical experiment was sown at Woburn but was abandoned after severe damage by birds during the winter.
(3) Spring N was applied as 'Nitro-Chalk 25'. N at flowering was applied as a mixture of ammonium nitrate and urea applied in 530 l (the solution contained 6% N). The total dressing was divided equally between two occasions: 13 June and 5 July.

Basal applications: Manures: Gt. Harpenden I (RH) and Little Hoos (RD): (0:20:20) at 320 kg. Weedkillers: Gt. Harpenden I (RH): Mecoprop with bromoxynil and ioxynil ('Brittox' at 3.5 kg) in 220 l. Little Hoos (RD): Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 kg) in 220 l.

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78/R/WW/1

Seed: Both sites: Varieties sown at 200 kg except Sportsman which had a smaller germination percentage and was sown at 260 kg.

Cultivations, etc.:-
Gt. Harpenden I (RH): PK applied: 1 Nov, 1977. Heavy spring-tine cultivated: 5 Nov. Spring-tine cultivated twice: 8 Nov, 15 Nov. Seed sown, spring-tine cultivated: 16 Nov. Spring N applied: 25 Apr, 1978. Weedkillers applied: 11 May. Combine harvested: 13 Sept. Previous crops: Oats 1976, potatoes 1977.
Little Hoos (RD): Ploughed: 23 Sept, 1977. PK applied: 1 Nov. Heavy spring-tine cultivated: 5 Nov. Seed sown: 10 Nov. Spring N applied: 28 Apr, 1978. Weedkillers applied: 8 May. Combine harvested: 14 Sept. Previous crops: Beans 1976, wheat 1977.

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

78/R/WW/1 GREAT HARPENDEN I (RH) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

N	0	63	126	63+63	MEAN
VARIETY					
ARMADA	3.87	6.31	7.57	6.85	6.15
ATOU	4.58	5.56	6.38	5.93	5.61
FLANDERS	3.64	5.62	6.81	6.40	5.62
HOBBIT	3.82	5.94	7.91	6.81	6.12
KADOR	4.23	6.13	7.57	5.37	5.82
MARDLER	4.57	6.44	7.05	7.22	6.32
HUNTSMAN	3.88	5.58	6.73	6.32	5.63
KINSMAN	3.23	5.12	6.44	5.95	5.19
SPORTSMN	4.24	6.35	7.11	6.53	6.06
MEAN	4.01	5.89	7.06	6.38	5.84

GRAIN MEAN DM% 83.9

SUB PLOT AREA HARVESTED 0.00217

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78/R/WW/1 LITTLE HOOS (RD) PATHOGEN INFECTED

GRAIN TONNES/HECTARE

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

N VARIETY	63	126	189	126+63	MEAN
ARMADA	5.28	6.96	7.19	7.05	6.62
ATOU	5.34	6.45	6.69	6.62	6.28
FLANDERS	5.03	6.33	7.06	6.83	6.32
HOBBIT	5.79	6.84	6.44	6.58	6.41
KADOR	5.23	6.32	7.15	6.89	6.40
MARDLER	5.77	6.69	6.73	7.18	6.59
HUNTSMAN	5.52	6.69	7.82	6.93	6.74
KINSMAN	5.28	6.73	6.87	6.89	6.44
SPORTSMN	5.80	6.76	6.50	6.81	6.47
MEAN	5.45	6.64	6.94	6.86	6.47

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

TABLE	VARIETY	N	VARIETY N
SED	0.162	0.081	0.265
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY			0.242

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

STRATUM	DF	SE	CV%
BLOCK.WP	24	0.229	3.5
BLOCK.WP.SP	81	0.342	5.3

GRAIN MEAN DM% 79.4

SUB PLOT AREA HARVESTED 0.00172

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78/R/WW/2 and 78/W/WW/2

WINTER WHEAT

AQUEOUS N AND NITRIFICATION INHIBITORS

Object: To study the effects of adding nitrification inhibitors to aqueous urea and aqueous ammonia on the yield and nitrogen uptake of winter wheat sown conventionally or direct drilled - Rothamsted (R), White Horse I and Woburn (W), Horsepool Lane Close West.

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

Design: Single replicate of 40 plots, split semi-systematically into 2 for DRILLING (White Horse I (R)). 2 randomised blocks of 42 plots (Horsepool Lane Close West (W)).

Whole plot dimensions: White Horse I (R): 4.27 x 29.0.
Horsepool Lane Close West (W): 4.27 x 9.14.

Treatments: All combinations of:-

Whole plots

1. N FORM(1)	Forms of aqueous nitrogen:	
AMMONIA	Aqueous ammonia 28% N	
UREA	Aqueous urea 18% N	
2. N RATE	Rate of nitrogen (kg N):	
80		
120		
3. N TIME	Times of applying aqueous nitrogen:	
AUTUMN		
SPRING		
4. NIT INHB	Nitrification inhibitors added to aqueous nitrogen:	
NONE	None	
NITRAPYR	Nitrapyrin	
SOD TRI	Sodium trithiocarbonate	

plus extra treatments given additional forms of nitrogen fertiliser (kg N):

N FORM(2)	
0	0
NC 70	70 as 'Nitro-Chalk' in spring
NC 80	80 as 'Nitro-Chalk' in spring
NC 90	90 as 'Nitro-Chalk' in spring
NC 100	100 as 'Nitro-Chalk' in spring
NC 110	110 as 'Nitro-Chalk' in spring
NC 120	120 as 'Nitro-Chalk' in spring
NC 130	130 as 'Nitro-Chalk' in spring

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78/R/WW/2 & 78/W/WW/2

A40INC80	Aqueous ammonia (A) at 40 plus nitropyrin (I) applied in autumn, 'Nitro-Chalk 25' (NC) at 80 in spring
A80INC40	A at 80 plus I in autumn, NC at 40 in spring
A40TNC80	A at 40 plus sodium trithiocarbonate (T) in autumn, NC at 80 in spring
A80TNC40	A at 80 plus T in autumn, NC at 40 in spring
U40INC80	Aqueous urea (U) at 40 plus I in autumn, NC at 80 in spring
U80INC40	U at 80 plus I in autumn, NC at 40 in spring
U40TNC80	U at 40 plus T in autumn, NC at 80 in spring
U80TNC40	U at 80 plus T in autumn, NC at 40 in spring

and at Horsepool Lane Close West (W) only, in aqueous form in spring:

AS -- 120	120 as ammonium sulphate
AS IC 120	120 as ammonium sulphate plus I and carbon disulphide

Sub plots (White Horse I (R) only)

5. DRILLING	Cultivations and drilling:
CNVNTIAL	Cultivated and conventionally drilled
DIRECT	Uncultivated, direct drilled

NOTES: (1) Nitrification inhibitor rates:
White Horse I (R): Aqueous N applied with nitrapyrin at 1.5 kg or with sodium trithiocarbonate at 40 kg in autumn and with nitrapyrin at 1.0 kg or with sodium trithiocarbonate at 17 kg in spring.
Horsepool Lane Close West (W): Aqueous N applied with nitrapyrin at 1.5 kg or with sodium trithiocarbonate at 40 kg in autumn and with nitrapyrin at 1.0 kg or with sodium trithiocarbonate at 20 kg. Aqueous ammonium sulphate applied with nitrapyrin at 1.0 kg plus carbon disulphide at 10 kg as an emulsion in spring.
(2) Aqueous nitrogen was applied by injectors with tines spaced 30 cm apart, 10 cm deep.

Basal applications:
White Horse I (R): Manures: (0:20:20) at 310 kg, combine drilled. Weedkillers: Difenzoquat at 0.99 kg with 1 l 'Agral' (a wetting agent) plus 2, 4-D at 0.98 kg in 220 l. Paraquat at 0.84 kg ion and 0.56 kg ion on successive occasions, both in 220 l. Growth regulator: Chlormequat at 1.4 kg in 220 l.
Horsepool Lane Close West (W): Manures: (0:20:20) at 310 kg, combine drilled. Weedkiller: Mecoprop at 2.1 kg in 280 l. Growth regulator: Chlormequat at 1.7 kg in 280 l.

Seed: White Horse I (R) and Horsepool Lane Close West (W): Maris Huntsman, sown at 190 kg.

Cultivations, etc.:-
White Horse I (R): Stubble chopped: 21 Sept, 1977. Conventionally drilled plots only: Heavy spring-tine cultivated three times: 4 Oct. Paraquat applied twice: 11 Oct, 19 Oct. Aqueous N with inhibitors injected: 12 Oct. Conventionally drilled plots only: rotary harrowed 28 Oct, seed sown 29 Oct. Direct drilled plots only: seed sown 4 Nov. Aqueous N with inhibitors injected: 10 Apr, 1978. 'Nitro-Chalk' treatments applied: 27 Apr. Weedkillers applied: 11 May. Growth regulator applied: 17 May. Combine harvested: 29 Aug. Previous crops: Barley 1976, oats 1977.

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78/R/WW/2 & 78/W/WW/2

Horsepool Lane Close West (W): Heavy spring-tine cultivated twice: 22 Sept, 1977. Aqueous N with inhibitors injected: 10 Oct. Heavy spring-tine cultivated, rotary cultivated: 19 Oct. Seed sown: 20 Oct. Weedkiller applied: 8 Apr, 1978. Aqueous N with inhibitors injected: 17 Apr. 'Nitro-Chalk' treatments applied: 27 Apr. Growth regulator applied: 18 May. Combine harvested: 4 Sept. Previous crops: Barley 1976, winter oats 1977.

NOTES: (1) Soil samples were taken at monthly intervals, November to July for measurement of N in the injected bands. N was measured in a cross section of the band at Rothamsted only.
(2) Plant top samples were taken at fortnightly intervals from April until G.S.10 and then ear samples for measurement of nitrate N at Rothamsted only.

78/R/WW/2 WHITE HORSE I(R)

GRAIN TONNES/HECTARE

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

N FORM(1)	AMMONIA	UREA	MEAN
NIT INHB			
NONE	5.24	5.37	5.30
NITRAPYR	6.03	5.89	5.96
SOD TRI	5.09	5.99	5.54
MEAN	5.45	5.75	5.60

N RATE	80	120	MEAN
NIT INHB			
NONE	5.06	5.54	5.30
NITRAPYR	5.47	6.45	5.96
SOD TRI	5.06	6.03	5.54
MEAN	5.20	6.01	5.60

N RATE	80	120	MEAN
N FORM(1)			
AMMONIA	5.12	5.79	5.45
UREA	5.27	6.23	5.75
MEAN	5.20	6.01	5.60

N TIME	AUTUMN	SPRING	MEAN
NIT INHB			
NONE	4.17	6.43	5.30
NITRAPYR	5.39	6.54	5.96
SOD TRI	4.79	6.30	5.54
MEAN	4.78	6.42	5.60

N TIME	AUTUMN	SPRING	MEAN
N FORM(1)			
AMMONIA	4.61	6.30	5.45
UREA	4.95	6.55	5.75
MEAN	4.78	6.42	5.60

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78/R/WW/2 WHITE HORSE I(R)

GRAIN TONNES/HECTARE

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

N TIME N RATE	AUTUMN	SPRING	MEAN
80	4.29	6.11	5.20
120	5.27	6.74	6.01
MEAN	4.78	6.42	5.60

DRILLING NIT INHB	CNVNTIAL	DIRECT	MEAN
NONE	5.09	5.52	5.30
NITRAPYR	5.86	6.06	5.96
SOD TRI	5.35	5.74	5.54
MEAN	5.43	5.77	5.60

DRILLING N FORM(1)	CNVNTIAL	DIRECT	MEAN
AMMONIA	5.26	5.65	5.45
UREA	5.60	5.90	5.75
MEAN	5.43	5.77	5.60

DRILLING N RATE	CNVNTIAL	DIRECT	MEAN
80	4.97	5.43	5.20
120	5.90	6.12	6.01
MEAN	5.43	5.77	5.60

DRILLING N TIME	CNVNTIAL	DIRECT	MEAN
AUTUMN	4.65	4.91	4.78
SPRING	6.21	6.64	6.42
MEAN	5.43	5.77	5.60

DRILLING N FORM(2)	CNVNTIAL	DIRECT	MEAN
0	4.23	4.86	4.54
NC 70	5.75	5.15	5.45
NC 80	6.03	6.32	6.18
NC 90	6.26	6.22	6.24
NC 100	6.86	7.00	6.93
NC 110	6.88	6.09	6.49
NC 120	6.90	6.86	6.88
NC 130	6.97	6.86	6.92
A40INC80	4.83	6.26	5.55
A80INC40	6.40	6.91	6.66
A40TNC80	6.26	6.69	6.47
A80TNC40	5.51	5.91	5.71
U40INC80	6.45	6.36	6.41
U80INC40	6.01	6.54	6.27
U40TNC80	5.96	6.72	6.34
U80TNC40	6.21	5.94	6.07
MEAN	6.09	6.29	6.19

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78/R/WW/2 WHITE HORSE I(R)

GRAIN TONNES/HECTARE

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

N FORM(1)	AMMONIA		UREA	
N RATE	80	120	80	120
NIT INHB				
NONE	5.16	5.31	4.97	5.77
NITRAPYR	5.45	6.62	5.50	6.28
SOD TRI	4.76	5.42	5.35	6.63

N FORM(1)	AMMONIA		UREA	
N TIME	AUTUMN	SPRING	AUTUMN	SPRING
NIT INHB				
NONE	4.28	6.19	4.06	6.68
NITRAPYR	5.32	6.75	5.45	6.33
SOD TRI	4.22	5.97	5.36	6.62

N RATE	80		120	
N TIME	AUTUMN	SPRING	AUTUMN	SPRING
NIT INHB				
NONE	3.95	6.17	4.39	6.70
NITRAPYR	4.59	6.35	6.18	6.73
SOD TRI	4.32	5.80	5.26	6.79

N RATE	80		120	
N TIME	AUTUMN	SPRING	AUTUMN	SPRING
N FORM(1)				
AMMONIA	4.26	5.99	4.96	6.62
UREA	4.32	6.23	5.59	6.86

N FORM(1)	AMMONIA		UREA	
DRILLING	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
NIT INHB				
NONE	5.17	5.30	5.00	5.73
NITRAPYR	5.72	6.34	6.00	5.78
SOD TRI	4.89	5.30	5.81	6.17

N RATE	80		120	
DRILLING	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
NIT INHB				
NONE	4.85	5.27	5.32	5.77
NITRAPYR	5.26	5.69	6.46	6.44
SOD TRI	4.78	5.33	5.91	6.14

N RATE	80		120	
DRILLING	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
N FORM(1)				
AMMONIA	4.79	5.45	5.73	5.85
UREA	5.14	5.41	6.07	6.39

N TIME	AUTUMN		SPRING	
DRILLING	CNVNTIAL	DIRECT	CNVNTIAL	DIRECT
NIT INHB				
NONE	4.04	4.30	6.13	6.73
NITRAPYR	5.35	5.42	6.37	6.71
SOD TRI	4.57	5.01	6.13	6.46

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78/R/WW/2 WHITE HORSE I(R)

GRAIN TONNES/HECTARE

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

N TIME DRILLING / N FORM(1)	AUTUMN CNVNTIAL	AUTUMN DIRECT	SPRING CNVNTIAL	SPRING DIRECT
AMMONIA	4.35	4.86	6.17	6.43
UREA	4.95	4.96	6.25	6.84

N TIME DRILLING / N RATE	AUTUMN CNVNTIAL	AUTUMN DIRECT	SPRING CNVNTIAL	SPRING DIRECT
80	4.05	4.53	5.88	6.33
120	5.26	5.29	6.54	6.94

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

TABLE	N FORM(2) DRILLING	N FORM(1) DRILLING	N RATE DRILLING
SED	0.762*	0.220*	0.220*

TABLE	N TIME DRILLING	NIT INHB DRILLING	N FORM(1) N RATE DRILLING	N FORM(1) N TIME DRILLING
SED	0.220*	0.269*	0.311*	0.311*

TABLE	N RATE N TIME DRILLING	N FORM(1) NIT INHB DRILLING	N RATE NIT INHB DRILLING	N TIME NIT INHB DRILLING
SED	0.311*	0.381*	0.381*	0.381*

* ONLY FOR COMPARING THE DIFFERENCE OF TWO EFFECTS OF DRILLING.
THE SED OF SUCH A DIFFERENCE EQUALS 1.4142 TIMES THE SED SHOWN.

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

STRATUM	DF	SE	CV%
WP.SP	9	0.539	9.2

GRAIN MEAN DM% 83.8

PLOT AREA HARVESTED 0.00279

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78/W/WW/2 HORSEPOOL LANE CLOSE (W)

GRAIN TONNES/HECTARE

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

N FORM(1)	AMMONIA	UREA	MEAN
NIT INHB			
NONE	6.24	6.25	6.24
NITRAPYR	6.78	6.30	6.54
SOD TRI	6.03	6.84	6.44
MEAN	6.35	6.46	6.41

N RATE	80	120	MEAN
NIT INHB			
NONE	6.09	6.40	6.24
NITRAPYR	5.98	7.10	6.54
SOD TRI	5.51	7.37	6.44
MEAN	5.86	6.96	6.41

N RATE	80	120	MEAN
N FORM(1)			
AMMONIA	5.70	7.01	6.35
UREA	6.02	6.91	6.46
MEAN	5.86	6.96	6.41

N TIME	AUTUMN	SPRING	MEAN
NIT INHB			
NONE	6.06	6.42	6.24
NITRAPYR	6.26	6.83	6.54
SOD TRI	6.16	6.71	6.44
MEAN	6.16	6.66	6.41

N TIME	AUTUMN	SPRING	MEAN
N FORM(1)			
AMMONIA	6.32	6.38	6.35
UREA	6.00	6.93	6.46
MEAN	6.16	6.66	6.41

N TIME	AUTUMN	SPRING	MEAN
N RATE			
80	5.06	6.65	5.86
120	7.26	6.66	6.96
MEAN	6.16	6.66	6.41

N FORM(1)	AMMONIA		UREA	
N RATE	80	120	80	120
NIT INHB				
NONE	5.80	6.68	6.38	6.12
NITRAPYR	6.20	7.37	5.77	6.84
SOD TRI	5.09	6.98	5.92	7.76

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

78/W/WW/2 HORSEPOOL LANE CLOSE (W)

GRAIN TONNES/HECTARE

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

N FORM(1)	AMMONIA		UREA	
N TIME	AUTUMN	SPRING	AUTUMN	SPRING
NIT INHB				
NONE	6.47	6.01	5.66	6.84
NITRAPYR	6.70	6.87	5.82	6.79
SOD TRI	5.79	6.28	6.54	7.15

N RATE	80		120	
N TIME	AUTUMN	SPRING	AUTUMN	SPRING
NIT INHB				
	5.44	6.73	6.68	6.12
NITRAPYR	5.13	6.84	7.39	6.82
SOD TRI	4.62	6.39	7.70	7.04

N RATE	80		120	
N TIME	AUTUMN	SPRING	AUTUMN	SPRING
N FORM(1)				
AMMONIA	4.96	6.43	7.68	6.34
UREA	5.17	6.88	6.84	6.98

N RATE		80		120	
N TIME		AUTUMN	SPRING	AUTUMN	SPRING
NIT INHBN	FORM(1)				
NONE	AMMONIA	5.42	6.18	7.52	5.84
	UREA	5.47	7.28	5.84	6.40
NITRAPYR	AMMONIA	5.54	6.86	7.86	6.88
	UREA	4.71	6.83	6.92	6.76
SOD TRI	AMMONIA	3.92	6.25	7.65	6.30
	UREA	5.32	6.53	7.75	7.77

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78/W/WW/2/HORSEPOOL LANE CLOSE (W)

GRAIN TONNES/HECTARE

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

N FORM(2)	
0	4.14
NC 70	6.96
NC 80	6.23
NC 90	6.73
NC 100	6.94
NC 110	7.17
NC 120	6.60
NC 130	7.00
A40INC80	7.01
A80INC40	6.68
A40TNC80	7.35
A80TNC40	6.71
U40INC80	7.90
U80INC40	7.31
U40TNC80	6.70
U80TNC40	7.27
AS --120	7.69
AS IC120	7.58
MEAN	6.89
GRAND MEAN	6.41

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

TABLE	N FORM(2)	NIT INHB	N FORM(1)	N RATE
SED	0.867	0.307	0.250	0.250

TABLE	N TIME	NIT INHB N FORM(1)	NIT INHB N RATE	N FORM(1) N RATE
SED	0.250	0.434	0.434	0.354

TABLE	NIT INHB N TIME	N FORM(1) N TIME	N RATE N TIME	NIT INHB N FORM(1) N RATE
SED	0.434	0.354	0.354	0.613

TABLE	NIT INHB N FORM(1) N TIME	NIT INHB N RATE N TIME	N FORM(1) N RATE N TIME	NIT INHB N FORM(1) N RATE N TIME
SED	0.613	0.613	0.501	0.867

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

STRATUM	DF	SE	CV%
BLOCK.WP	41	0.867	13.1

GRAIN MEAN DM% 81.1

PLOT AREA HARVESTED 0.00279

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

78/R/WW/4

WINTER WHEAT

PRECISION SOWING, IRRIGATION & N

Object: To study the effects of precision sowing, seed rates, irrigation and nitrogen fertiliser on the growth and yield of winter wheat - Gt. Field I & II.

Sponsors: G.N. Thorne, P.J. Welbank, F.V. Widdowson.

Design: Single replicate of 3 x 2 x 2 x 2 x 2 + 20 extra plots.

Whole plot dimensions: (1) ND, BND and HS: 4.27 x 15.2
(2) ST: 4.88 x 15.2

Treatments: All combinations of:-

1. DRL SPAC — Drills and spacing between rows:

ST1	Stanhay precision drill, rows 10.5 cm apart
ND1	Nordsten drill, rows 10.5 cm apart
ND2	Nordsten drill, rows 21 cm apart

2. SEEDRATE — Seed rates:

S1	Half standard (188 seeds per square metre, 115 kg)
S2	Standard (376 seeds per square metre, 230 kg)

3. IRRIGATN — Irrigation:

NONE	None
FULL	Irrigated (total 102.2 mm). Whenever the soil moisture deficit exceeded 25 mm, irrigation was applied to reduce this to 12 mm.

4. EARLY N — Nitrogen fertiliser as 'Nitro-Chalk 25' on 28 April (kg N):

EN3	90
EN5	150

5. LATE N — Nitrogen fertiliser as 'Nitro-Chalk 25' on 24 May (kg N):

LN0	0
LN1	30

plus twenty additional plots:

EXTRA — Sown with the Nordsten drill, rows 10.5 cm apart, standard seed rate, not irrigated, with eight nitrogen rates, applied in April (kg N):

ND1S2EN0	0
ND1S2EN1	30
ND1S2EN2	60
ND1S2EN3	90
ND1S2EN4	120
ND1S2EN5	150
ND1S2EN6	180
ND1S2EN7	210

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Sown with Nordsten drill but with seed tubes disconnected to broadcast the seed, unirrigated, nitrogen applied on 28 April, all treatments duplicated:

BNDS1EN3	Half standard seed rate, 90 kg N
BNDS1EN5	Half standard seed rate, 150 kg N
BNDS2EN3	Standard seed rate, 90 kg N
BNDS2EN5	Standard seed rate, 150 kg N

Sown by hand at half standard seed rate in rows 10.5 cm apart, unirrigated, nitrogen applied on 28 April, all treatments duplicated:

HS1S1EN3	Half standard seed rate, 90 kg N
HS1S1EN5	Half standard seed rate, 150 kg N

NOTE: Irrigation treatments (mm water)

30 May, 1978	25.6
14 June	21.6
21 June	15.5
19 July	18.3
28 July	21.2
Total	102.2

Basal applications: Manures: (0:20:20) at 310 kg. Weedkillers: (1) Methabenzthiazuron 2.0 kg in 280 l, (2) Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 l in 220 l). Growth regulator: Chlormequat at 1.4 kg in 220 l. Fungicide: Triadimefon at 0.13 kg in 220 l.

Seed: Maris Huntsman.

Cultivations, etc.:- Ploughed: 20 Oct, 1977. Heavy spring-tine cultivated, PK applied: 24 Oct. Rotary harrowed: 25 Oct. Seed sown: 27 Oct. Weedkiller (1) applied: 4 Nov. Rolled: 6 April, 1978. Weedkiller (2) and growth regulator (mix) applied: 10 May. Fungicide applied: 14 June. Combine harvested: 4 Sept. Previous crops: Barley 1976, beans 1977.

NOTE: Emergence counts were made in December. Measurements were made of shoot numbers, dry weight of tops and ears, leaf area, and nitrogen content four times during the season. Weekly measurements were made of stem nitrate (between late April and mid July), of soil moisture (between mid April and August) and on two occasions measurements were made of light intensity at ground level.

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GRAIN TONNES/HECTARE

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

SEEDRATE DRL SPAC	S1	S2	MEAN
ST1	7.99	8.11	8.05
ND1	8.00	8.33	8.17
ND2	7.86	8.01	7.94
MEAN	7.95	8.15	8.05

IRRIGATN DRL SPAC	NONE	FULL	MEAN
ST1	8.16	7.94	8.05
ND1	8.27	8.06	8.17
ND2	8.09	7.78	7.94
MEAN	8.18	7.93	8.05

IRRIGATN SEEDRATE	NONE	FULL	MEAN
S1	8.00	7.91	7.95
S2	8.35	7.94	8.15
MEAN	8.18	7.93	8.05

EARLY N DRL SPAC	EN3	EN5	MEAN
ST1	7.81	8.29	8.05
ND1	7.96	8.38	8.17
ND2	7.55	8.32	7.94
MEAN	7.77	8.33	8.05

EARLY N SEEDRATE	EN3	EN5	MEAN
S1	7.70	8.21	7.95
S2	7.85	8.45	8.15
MEAN	7.77	8.33	8.05

EARLY N IRRIGATN	EN3	EN5	MEAN
NONE	7.88	8.47	8.18
FULL	7.67	8.18	7.93
MEAN	7.77	8.33	8.05

LATE N DRL SPAC	LN0	LN1	MEAN
ST1	7.81	8.29	8.05
ND1	8.03	8.30	8.17
ND2	7.80	8.07	7.94
MEAN	7.88	8.22	8.05

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GRAIN TONNES/HECTARE

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

LATE N SEEDRATE	LN0	LN1	MEAN
S1	7.80	8.10	7.95
S2	7.95	8.34	8.15
MEAN	7.88	8.22	8.05

LATE N IRRIGATN	LN0	LN1	MEAN
NONE	7.99	8.36	8.18
FULL	7.77	8.08	7.93
MEAN	7.88	8.22	8.05

LATE N EARLY N	LN0	LN1	MEAN
EN3	7.52	8.03	7.77
EN5	8.24	8.42	8.33
MEAN	7.88	8.22	8.05

SEEDRATE	S1		S2	
IRRIGATN	NONE	FULL	NONE	FULL
DRL SPAC				
ST1	8.19	7.80	8.13	8.09
ND1	7.95	8.06	8.60	8.06
ND2	7.85	7.87	8.33	7.68

SEEDRATE	S1		S2	
EARLY N	EN3	EN5	EN3	EN5
DRL SPAC				
ST1	7.82	8.17	7.80	8.41
ND1	7.83	8.18	8.09	8.57
ND2	7.45	8.27	7.65	8.37

IRRIGATN	NONE		FULL	
EARLY N	EN3	EN5	EN3	EN5
DRL SPAC				
ST1	7.78	8.54	7.84	8.04
ND1	8.19	8.36	7.72	8.39
ND2	7.66	8.53	7.45	8.11

IRRIGATN	NONE		FULL	
EARLY N	EN3	EN5	EN3	EN5
SEEDRATE				
S1	7.72	8.27	7.68	8.14
S2	8.03	8.68	7.66	8.22

SEEDRATE	S1		S2	
LATE N	LN0	LN1	LN0	LN1
DRL SPAC				
ST1	7.71	8.27	7.90	8.31
ND1	7.88	8.13	8.18	8.47
ND2	7.82	7.91	7.78	8.24

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GRAIN TONNES/HECTARE

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

IRRIGATN	NONE		FULL	
LATE N	LN0	LN1	LN0	LN1
DRL SPAC				
ST1	7.92	8.39	7.69	8.19
ND1	8.11	8.43	7.95	8.17
ND2	7.93	8.25	7.66	7.89

IRRIGATN	NONE		FULL	
LATE N	LN0	LN1	LN0	LN1
SEEDRATE				
S1	7.84	8.16	7.77	8.05
S2	8.14	8.57	7.77	8.12

EARLY N	EN3		EN5	
LATE N	LN0	LN1	LN0	LN1
DRL SPAC				
ST1	7.47	8.16	8.15	8.43
ND1	7.83	8.08	8.23	8.52
ND2	7.26	7.84	8.33	8.30

EARLY N	EN3		EN5	
LATE N	LN0	LN1	LN0	LN1
SEEDRATE				
S1	7.51	7.89	8.09	8.32
S2	7.52	8.17	8.38	8.52

EARLY N	EN3		EN5	
LATE N	LN0	LN1	LN0	LN1
IRRIGATN				
NONE	7.57	8.19	8.41	8.54
FULL	7.47	7.87	8.07	8.30

EXTRA	
ND1S2EN0	5.75
ND1S2EN1	6.20
ND1S2EN2	6.09
ND1S2EN3	7.41
ND1S2EN4	7.85
ND1S2EN5	8.30
ND1S2EN6	8.59
ND1S2EN7	8.71
BNDS1EN3	8.05
BNDS1EN5	8.84
BNDS2EN3	8.05
BNDS2EN5	8.78
HS1S1EN3	7.52
HS1S1EN5	8.62

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GRAIN TONNES/HECTARE

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

TABLE	DRL SPAC	SEEDRATE	IRRIGATN	EARLY N
SED	0.155	0.127	0.127	0.127

TABLE	LATE N	DRL SPAC SEEDRATE	DRL SPAC IRRIGATN	SEEDRATE IRRIGATN
SED	0.127	0.220	0.220	0.179

TABLE	DRL SPAC EARLY N	SEEDRATE EARLY N	IRRIGATN EARLY N	DRL SPAC LATE N
SED	0.220	0.179	0.179	0.220

TABLE	SEEDRATE LATE N	IRRIGATN LATE N	EARLY N LATE N	DRL SPAC SEEDRATE IRRIGATN
SED	0.179	0.179	0.179	0.311

TABLE	DRL SPAC SEEDRATE EARLY N	DRL SPAC IRRIGATN EARLY N	SEEDRATE IRRIGATN EARLY N	DRL SPAC SEEDRATE LATE N
SED	0.311	0.311	0.254	0.311

TABLE	DRL SPAC IRRIGATN LATE N	SEEDRATE IRRIGATN LATE N	DRL SPAC EARLY N LATE N	SEEDRATE EARLY N LATE N
SED	0.311	0.254	0.311	0.254

TABLE	IRRIGATN EARLY N LATE N	EXTRA	
SED	0.254	0.621	MIN REP
		0.538	MAX-MIN
		0.439	MAX REP

EXTRA
MAX REP BNDS1EN3,BNDS1EN5,BNDS2EN3,BNDS2EN5,
HS1S1EN3,HS1S1EN5
MAX-MIN THOSE IN MAX REP V ANY OF REMAINDER
MIN REP ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
WP	17	0.439	5.5

MEAN DM% 83.2

PLOT AREA HARVESTED 0.00195

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

78/R/WW/5

WINTER WHEAT

SEED RATES AND DIVIDED N DRESSINGS

Object: To study the effects of seed rates, precision sowing, a growth regulator, foliar fungicide and rates and times of nitrogen fertiliser on the growth and yield of winter wheat - Gt. Field I.

Sponsors: J. McEwen, R. Moffitt.

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

Whole plot dimensions: 3.25 x 7.62.

Treatments: All combinations of:-

1. DR SD RT — Drills and seed rates:

NRDSTN 1	Nordsten conventional drill, seed rate 120 kg
NRDSTN 2	Nordsten conventional drill, seed rate 240 kg
STNHAY 1	Stanhay precision drill, seed rate 120 kg

2. GRTH REG — Growth regulator:

NONE	None
CHLORMEQ	Chlormequat at 1.7 kg on 25 April

3. FUNGCIDE — Fungicide:

NONE	None
T+C+M+S	Tridemorph at 0.45 kg + carbendazim at 0.21 kg + maneb at 1.33 kg + sulphur at 2.4 kg in 340 l on 12 June, 1978 and on 6 July

4. N — Nitrogen fertiliser, times and rates (kg N as 'Nitro-Chalk 25'):

	7 March	17 April	6 June
1 3 1	25	75	25
1 4 1	25	100	25
0 4 0	0	100	0
0 5 0	0	125	0
0 6 0	0	150	0
0 4 1	0	100	25

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

Seed: Maris Huntsman.

Cultivations, etc.:- Ploughed: 20 Oct, 1977. Heavy spring-tine cultivated, PK applied: 24 Oct. Rotary harrowed: 25 Oct. Seed sown: 27 Oct. Rolled: 6 Apr, 1978. Weedkiller applied: 10 May. Combine harvested: 4 Sept. Previous crops: Barley 1976, beans 1977.

NOTES: (1) Establishment counts were made in February 1978.
(2) Ear counts were made in August. 1000 grain weights were measured and grain was analysed for N percentage.

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GRAIN TONNES/HECTARE

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

GRTH REG DR SD RT	NONE	CHLORMEQ	MEAN
NRDSTN 1	8.81	9.39	9.10
NRDSTN 2	8.90	9.16	9.03
STNHAY 1	8.96	9.07	9.02
MEAN	8.89	9.21	9.05

FUNGCIDE DR SD RT	NONE	T+C+M+S	MEAN
NRDSTN 1	9.08	9.12	9.10
NRDSTN 2	8.99	9.08	9.03
STNHAY 1	8.87	9.16	9.02
MEAN	8.98	9.12	9.05

FUNGCIDE GRTH REG	NONE	T+C+M+S	MEAN
NONE	8.79	9.00	8.89
CHLORMEQ	9.17	9.25	9.21
MEAN	8.98	9.12	9.05

N DR SD RT	1 3 1	1 4 1	0 4 0	0 5 0	0 6 0	0 4 1	MEAN
NRDSTN 1	9.35	9.65	8.06	9.23	9.35	8.96	9.10
NRDSTN 2	9.06	9.56	8.45	8.98	9.01	9.14	9.03
STNHAY 1	8.81	9.26	8.60	8.97	9.07	9.39	9.02
MEAN	9.07	9.49	8.37	9.06	9.14	9.16	9.05

N GRTH REG	1 3 1	1 4 1	0 4 0	0 5 0	0 6 0	0 4 1	MEAN
NONE	8.97	9.10	8.15	8.84	9.13	9.16	8.89
CHLORMEQ	9.18	9.88	8.59	9.28	9.15	9.16	9.21
MEAN	9.07	9.49	8.37	9.06	9.14	9.16	9.05

N FUNGCIDE	1 3 1	1 4 1	0 4 0	0 5 0	0 6 0	0 4 1	MEAN
NONE	9.05	9.48	8.39	8.95	9.08	8.92	8.98
T+C+M+S	9.10	9.50	8.36	9.17	9.20	9.40	9.12
MEAN	9.07	9.49	8.37	9.06	9.14	9.16	9.05

GRTH REG	NONE		CHLORMEQ	
FUNGCIDE DR SD RT	NONE	T+C+M+S	NONE	T+C+M+S
NRDSTN 1	8.71	8.91	9.46	9.32
NRDSTN 2	8.83	8.98	9.15	9.18
STNHAY 1	8.82	9.09	8.91	9.23

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

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GRAIN TONNES/HECTARE

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

DR SD RT	GRTH REG	N	131	141	040	050	060	041
NRDSTN 1	NONE		9.13	9.41	7.51	8.69	9.33	8.79
	CHLORMEQ		9.58	9.88	8.61	9.76	9.36	9.13
NRDSTN 2	NONE		8.91	8.97	8.19	9.00	8.90	9.45
	CHLORMEQ		9.21	10.15	8.72	8.96	9.12	8.82
STNHAY 1	NONE		8.87	8.91	8.75	8.82	9.16	9.24
	CHLORMEQ		8.75	9.61	8.44	9.13	8.97	9.54

DR SD RT	FUNGCIDE	N	131	141	040	050	060	041
NRDSTN 1	NONE		9.20	9.72	8.16	9.20	9.33	8.89
	T+C+M+S		9.50	9.58	7.96	9.26	9.37	9.03
NRDSTN 2	NONE		9.20	9.57	8.41	8.65	9.10	8.98
	T+C+M+S		8.92	9.56	8.49	9.31	8.92	9.30
STNHAY 1	NONE		8.75	9.15	8.59	9.01	8.81	8.90
	T+C+M+S		8.87	9.36	8.61	8.93	9.32	9.89

GRTH REG	FUNGCIDE	N	131	141	040	050	060	041
NONE	NONE		8.93	9.01	8.22	8.54	9.05	8.96
	T+C+M+S		9.00	9.18	8.08	9.14	9.21	9.36
CHLORMEQ	NONE		9.17	9.94	8.56	9.37	9.11	8.88
	T+C+M+S		9.19	9.82	8.63	9.19	9.19	9.45

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

TABLE	DR SD RT	GRTH REG	FUNGCIDE	N
SED	0.084	0.069	0.069	0.119

TABLE	DR SD RT GRTH REG	DR SD RT FUNGCIDE	GRTH REG FUNGCIDE	DR SD RT N
SED	0.119	0.119	0.098	0.207

TABLE	GRTH REG N	FUNGCIDE N	DR SD RT GRTH REG FUNGCIDE	DR SD RT GRTH REG N
SED	0.169	0.169	0.169	0.293

TABLE	DR SD RT FUNGCIDE N	GRTH REG FUNGCIDE N
SED	0.293	0.239

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

STRATUM	DF	SE	CV%
WP	10	0.293	3.2

GRAIN MEAN DM% 82.0

PLOT AREA HARVESTED 0.00163

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

78/R/WW/6

WINTER 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 winter wheat - Geescroft.

Sponsor: R.A. Hill.

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

Whole plot dimensions: 4.27 x 13.1.

Treatments: All combinations of:

1. FUNGCIDE — Broad spectrum fungicides:

CAPTAFOL	Captafol at 0.57 kg
CARB+MAN	Carbendazim at 0.10 kg + maneb at 0.65 kg
BENOMYL	Benomyl at 0.45 kg

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

	4 July 1978	12 July	24 July
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

NOTE: Treatment sprays were applied in 340 l.

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled. 'Nitra-shell 34' at 300 kg. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' at 3.5 l in 220 l).

Seed: Maris Freeman, sown at 190 kg.

Cultivations, etc.:- Ploughed: 7 Oct, 1977. Rotary harrowed, seed sown: 14 Oct. N applied: 24 Apr, 1978. Weedkiller applied: 9 May. Combine harvested: 6 Sept. Previous crops: Barley 1976, beans 1977.

NOTES: (1) Grain microflora were assessed at 7-10 day intervals after heading on unsprayed plots, after each application of fungicide on treated plots and on all plots just before harvest.
(2) Thousand grain weights, germination of harvested produce and bread making quality were assessed.

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

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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	7.34	7.20	7.67	7.30	7.38	7.51	7.07	7.35
CARB+MAN	7.22	7.69	7.08	7.20	7.39	7.61	7.31	7.36
BENOMYL	7.27	7.11	7.08	7.43	7.28	7.23	7.83	7.32
MEAN	7.28	7.33	7.28	7.31	7.35	7.45	7.40	7.34

APP TIME NONE 7.12

GRAND MEAN 7.32

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

TABLE	FUNGCIDE	APP TIME	FUNGCIDE APP TIME
SED	0.151	0.231	0.400

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

STRATUM	DF	SE	CV%
BLOCK.WP	25	0.400	5.5

GRAIN MEAN DM% 81.8

PLOT AREA HARVESTED 0.00260

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78/R/WW/7

WINTER WHEAT

SOWING DATES AND INSECTICIDES

Object: To study the effects of dates of sowing and times of applying insecticides on the incidence of cereal aphids, barley yellow dwarf virus (BYDV) and on the yield of winter wheat - Claycroft.

Sponsor: R.T. Plumb.

Design: 3 randomised blocks of 12 plots.

Whole plot dimensions: 6.40 x 18.3.

Treatments: All combinations of:-

1. SOW DATE	Dates of sowing:
6 OCT	6 October, 1977
4 NOV	4 November
25 NOV	25 November
2. INSCTCDE(1)	Phorate granules to seedbed:
NONE	None
PHORATE	Phorate at 5 kg
3. INSCTCDE(2)	Menazon spray:
NONE	None
MENAZON	Menazon (0.7 l 'Saphi-Col' in 220 l on 7 July, 1978)

Basal applications: Manures: (0:20:20) at 310 kg, combine drilled, 'Nitra-Shell 34' at 350 kg. Weedkillers: Dicamba plus mecoprop and MCPA ('Banlene Plus' at 4.9 l in 220 l).

Seed: Flanders, sown at 190 kg.

Cultivations, etc.:- Ploughed: 4 Oct, 1977. Rotary harrowed all plots, treatments applied to SOW DATE 6 OCT and these plots only rotary harrowed 5 Oct and sown: 6 Oct. Treatments applied to SOW DATE 4 NOV and these plots only power harrowed and sown: 4 Nov. Treatments applied to SOW DATE 25 NOV and these plots only rotary harrowed and sown: 25 Nov. N applied: 8 May, 1978. Weedkillers applied: 9 May. Combine harvested: 13 Sept. Previous crops: Fallow 1976, beans 1977.

NOTE: Plant emergence, aphid and virus counts were made during the season, tiller counts before harvest and grains per ear at harvest.

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78/R/WW/7

GRAIN TONNES/HECTARE

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

INSCTCDE(1) SOW DATE	NONE	PHORATE	MEAN
6 OCT	6.94	7.65	7.29
4 NOV	7.66	7.91	7.79
25 NOV	6.53	6.55	6.54
MEAN	7.04	7.37	7.21

INSCTCDE(2) SOW DATE	NONE	MENAZON	MEAN
6 OCT	7.41	7.17	7.29
4 NOV	7.54	8.03	7.79
25 NOV	6.60	6.49	6.54
MEAN	7.19	7.23	7.21

INSCTCDE(2) INSCTCDE(1)	NONE	MENAZON	MEAN
NONE	6.99	7.10	7.04
PHORATE	7.39	7.36	7.37
MEAN	7.19	7.23	7.21

INSCTCDE(1)	NONE		PHORATE	
INSCTCDE(2)	NONE	MENAZON	NONE	MENAZON
SOW DATE				
6 OCT	7.04	6.83	7.79	7.51
4 NOV	7.29	8.03	7.80	8.03
25 NOV	6.63	6.44	6.57	6.54

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

TABLE	SOW DATE	INSCTCDE(1)	INSCTCDE(2)	SOW DATE INSCTCDE(1)
SED	0.221	0.180	0.180	0.312

TABLE	SOW DATE INSCTCDE(1) INSCTCDE(2)	INSCTCDE(1)	SOW DATE INSCTCDE(1) INSCTCDE(2)
SED	0.312	0.255	0.441

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

STRATUM	DF	SE	CV%
BLOCK.WP	22	0.540	7.5

GRAIN MEAN DM% 84.5

PLOT AREA HARVESTED 0.00260

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

78/R/WW/8

WINTER WHEAT

RATES & TIMES OF APPLYING N

Object: To study the effects of applying a range of nitrogen rates before and after ear initiation on the growth and yield of winter wheat - Gt. Field I.

Sponsors: G.N. Thorne, P.J. Taylor, P.J. Welbank.

Design: 4 randomised blocks of 8 plots.

Whole plot dimensions: 4.27 x 13.1.

Treatments: All combinations of:-

1. N DATE — Dates of applying nitrogen fertiliser:

6 MARCH	6 March, before ear initiation
17 APRIL	17 April, after ear initiation

2. N RATE — Rates of applying nitrogen fertiliser (kg N as 'Nitro-Chalk 25'):

0
60
120
180

Basal applications: Manures: (0:20:20) at 310 kg. Weedkillers: Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 l in 220 l). Fungicide: Triadimefon at 0.13 kg in 220 l.

Seed: Maris Huntsman, sown at 190 kg.

Cultivations, etc.:- Ploughed: 20 Oct, 1977. Heavy spring-tine cultivated and PK applied: 24 Oct. Rotary harrowed: 25 Oct. Seed sown: 26 Oct. Weedkiller applied: 10 May, 1978. Fungicide applied: 15 June. Combine harvested: 4 Sept. Previous crops: Barley 1976, beans 1977.

NOTE: Shoots were counted, apical development observed and lodging scored. Measurements of dry weights of tops and ears, leaf areas, nitrogen contents and shoot lengths were made during the season.

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GRAIN TONNES/HECTARE

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

N RATE / N DATE	0	60	120	180	MEAN
6 MARCH		6.12	7.34	7.54	7.00
17 APRIL		6.34	7.43	8.13	7.30
MEAN	4.31	6.23	7.38	7.83	6.44

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

TABLE	N DATE	N RATE	N DATE N RATE
SED	0.140	0.172	0.243 0.210*

* FOR COMPARING WITH N RATE 0

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

STRATUM	DF	SE	CV%
BLOCK.WP	22	0.343	5.3

GRAIN MEAN DM% 82.3

PLOT AREA HARVESTED 0.00260

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

78/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: 12.8 x 18.3.

Treatments:

INSCTCDE	Insecticides:
NONE	None
FON	Fonofos at 0.5 kg as 10% granules to the seedbed on 28 Oct, 1977
CHL	Chlorpyrifos at 1.17 kg as a foliar spray in 1100 l on 17 Apr, 1978 and 5 June
FON+CHL	Fonofos + chlorpyrifos at above rates and times

Basal applications: Manures: (10:24:24) at 250 kg, combine drilled. 'Nitro-Chalk 26' at 430 kg. Weedkillers: Isoproturon at 2.2 kg plus mecoprop at 2.5 kg in 220 l.

Seed: Flanders, sown at 190 kg.

Cultivations, etc.:- Ploughed: 24 Oct, 1977. Rotary harrowed: 26 Oct. Rotary harrowed after applying fonofos: 28 Oct. Seed sown: 1 Nov. N applied: 8 May, 1978. Weedkillers applied: 11 May. Combine harvested: 12 Sept. Previous crops: Fallow 1976, wheat 1977.

NOTE: Soil samples for pests and predators were taken six times during the season. Plant samples for stem borers were taken twice. Pitfall traps, emergence traps and sticky traps were examined weekly. Aphids and thrips were assessed during the season.

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

78/R/WW/9

GRAIN TONNES/HECTARE

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

INSCTCDE	NONE	FON	CHL	FON+CHL	MEAN
	4.88	5.14	5.45	5.63	5.27

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

TABLE	INSCTCDE
SED	0.389

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.476	9.0

GRAIN MEAN DM% 85.0

PLOT AREA HARVESTED 0.00520

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78/S/WW/1

WINTER WHEAT

RATES AND TIMES OF N AND FUNGICIDE

Object: To study the effects of fungicides and rates and times of nitrogen fertiliser on the incidence of foliar diseases and on yield of winter wheat - Saxmundham.

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

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

Whole plot dimensions: 6.40 x 2.74.

Treatments: Combinations of:

1. N AUTUMN	Nitrogen fertiliser in autumn (19 Oct, 1977):	
	0	None
	IBDU 1	Isobutylidene diurea at 50 kg N
2. N SPRING	Nitrogen fertiliser in spring (14 Mar, 1978):	
	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 7 June, half on 21 June
4. FUNGCIDE(1)	Fungicide:	
	0	None
	BN+CA+MA	Benomyl on 18 May, carbendazim + maneb on 7 June and 6 July
5. FUNGCIDE(2)	Fungicide:	
	0	None
	BENODANI	Benodanil on 21 June and on 6 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 at G.S.3, 3/5 at G.S.5, 1/5 at G.S.8.
NCA1NCD3	As previous treatment but spring/summer dressing at 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 spring/summer dressing at 150 kg N

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NOTES: (1) EXTRA nitrogen treatments were applied on the following dates: G.S.3 14 Mar, G.S.5 20 Apr, G.S.8 18 May.
(2) 'FUNGCIDE(1)' Benomyl was applied at 0.28 kg in 280 l and carbendazim at 0.25 kg plus maneb at 1.6 kg in 280 l.
(3) 'FUNGCIDE(2)' Benodanil was applied at 1.1 kg in 280 l.

Basal applications: Manures: Muriate of potash at 250 kg. (0:20:20) at 250 kg. Weedkillers: Isoproturon at 1.8 kg in 450 l. Ioxynil at 0.53 kg with mecoprop at 1.9 kg in 280 l applied with the fungicide and growth regulator (see below). Fungicide: Tridemorph at 0.53 kg. Insecticide: Pirimicarb at 0.14 kg in 280 l. Growth regulator: Chlormequat at 1.7 kg.

Seed: Maris Huntsman, sown at 200 kg.

Cultivations, etc.:- Muriate of potash applied: 21 Sept, 1977. Ploughed: 24 Sept. Harrowed and rolled three times: 12 Oct. PK applied, seed sown, isoproturon applied: 19 Oct. Ioxynil, mecoprop, tridemorph and chlormequat applied: 18 May, 1978. Pirimicarb applied: 3 Aug. Combine harvested: 23 Aug.

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GRAIN TONNES/HECTARE

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

N SPRING / N AUTUMN	0	NC 1	NC 2	NC 3	MEAN
0	2.83	5.20	6.37	6.88	5.32
IBDU 1	3.98	5.90	6.67	7.01	5.89
MEAN	3.40	5.55	6.52	6.94	5.60

N SUMMER / N AUTUMN	0	AG 1	MEAN
0	5.00	5.63	5.32
IBDU 1	5.74	6.04	5.89
MEAN	5.37	5.84	5.60

N SUMMER / N SPRING	0	AG 1	MEAN
0	3.06	3.75	3.40
NC 1	5.18	5.93	5.55
NC 2	6.45	6.58	6.52
NC 3	6.79	7.09	6.94
MEAN	5.37	5.84	5.60

FUNGCIDE(1) / N AUTUMN	0	BN+CA+MA	MEAN
0	5.23	5.41	5.32
IBDU 1	5.80	5.98	5.89
MEAN	5.51	5.69	5.60

FUNGCIDE(1) / N SPRING	0	BN+CA+MA	MEAN
0	3.27	3.54	3.40
NC 1	5.61	5.50	5.55
NC 2	6.40	6.63	6.52
NC 3	6.77	7.11	6.94
MEAN	5.51	5.69	5.60

FUNGCIDE(1) / N SUMMER	0	BN+CA+MA	MEAN
0	5.25	5.49	5.37
AG 1	5.78	5.90	5.84
MEAN	5.51	5.69	5.60

FUNGCIDE(2) / N AUTUMN	0	BENODANI	MEAN
0	5.36	5.27	5.32
IBDU 1	5.97	5.81	5.89
MEAN	5.67	5.54	5.60

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GRAIN TONNES/HECTARE

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

FUNGCIDE(2) N SPRING	0	BENODANI	MEAN
0	3.34	3.47	3.40
NC 1	5.63	5.48	5.55
NC 2	6.56	6.48	6.52
NC 3	7.14	6.75	6.94
MEAN	5.67	5.54	5.60

FUNGCIDE(2) N SUMMER	0	BENODANI	MEAN
0	5.32	5.42	5.37
AG 1	6.01	5.67	5.84
MEAN	5.67	5.54	5.60

FUNGCIDE(2) FUNGCIDE(1)	0	BENODANI	MEAN
0	5.64	5.39	5.51
BN+CA+MA	5.69	5.70	5.69
MEAN	5.67	5.54	5.60

EXTRA	NCA1NCD2	NCA1NCD3	IBA1NCD2	IBA1NCD3	MEAN
	7.27	7.69	6.64	7.52	7.28

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

TABLE	N AUTUMN	N SPRING	N SUMMER	FUNGCIDE(1)
SED	0.093	0.132	0.093	0.093

TABLE	FUNGCIDE(2)	EXTRA	N AUTUMN N SUMMER	N SPRING N SUMMER
SED	0.093	0.263	0.132	0.186

TABLE	N AUTUMN FUNGCIDE(1)	N SPRING FUNGCIDE(1)	N SUMMER FUNGCIDE(1)	N AUTUMN FUNGCIDE(2)
SED	0.132	0.186	0.132	0.132

TABLE	N SPRING FUNGCIDE(2)	N SUMMER FUNGCIDE(2)	FUNGCIDE(1) FUNGCIDE(2)	N AUTUMN N SPRING
SED	0.186	0.132	0.132	0.186

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

STRATUM	DF	SE	CV%
WP	10	0.263	4.4

GRAIN MEAN DM% 79.8

PLOT AREA HARVESTED 0.00098

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

78/R/WS/1

SPRING WHEAT

BACTERIAL INOCULATION

Object: To study the effects of applying a bacterial inoculant and additives on the growth and yield of spring wheat in the presence and absence of straw applied in winter - Hoosfield.

Sponsors: M.E. Brown, J.F. Witty.

Design: Single replicate of 2 x 3 split into 2 x 4.

Whole plot dimensions: 4.27 x 7.62.

Treatments: All combinations of:-

Whole plots

1. STRAW — Straw (t) applied in winter, chopped on site and ploughed in on 14 Dec, 1977:

   0.0
   7.5

2. SEEDBD N — Nitrogen fertiliser (kg N) (as 'Nitro-chalk 26') applied to seedbed on 17 May, 1978:

   30
   90
   150

Sub plots

3. WINTER N — Nitrogen fertiliser (kg N) (as 'Nitro-chalk 25') applied just before straw on 13 Dec, 1977:

   0
   30

4. INOCULNT — Inoculants sprayed on chopped straw:

0	None
B+W+C	Bacterial inoculant plus fermented whey plus cobalt lactate
W+C	Fermented whey plus cobalt lactate
C	Cobalt lactate

NOTE: Rates of application of INOCULNT were:
(1) Bacteria at 0.019 kg of a culture containing Actinomyces thermophilus, Azotobacter chroococcum, Cellvibrio, Cytophaga and Bacillus subtilis.
(2) Whey 6.67 kg.
(3) Cobalt lactate (0.22 kg 'Symbooster').
Materials were applied in 240 l.

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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.

Seed: Sicco, sown at 190 kg.

Cultivations, etc.:- Ploughed: 16 Dec, 1977. Rotary harrowed, seed sown: 15 Mar, 1978. Weedkillers applied: 26 May. Combine harvested: 16 Sept. Previous crops: Sugar beet 1976, barley 1977.

NOTE: Germination counts were made in May and the total dry weight of plants was measured in May and June.

GRAIN TONNES/HECTARE

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

SEEDBD N / STRAW	30	90	150	MEAN
0.0	2.30	2.98	3.85	3.04
7.5	1.60	2.22	3.07	2.29
MEAN	1.95	2.60	3.46	2.67

WINTER N / STRAW	0	30	MEAN
0.0	2.80	3.29	3.04
7.5	2.10	2.49	2.29
MEAN	2.45	2.89	2.67

WINTER N / SEEDBD N	0	30	MEAN
30	1.80	2.10	1.95
90	2.34	2.85	2.60
150	3.21	3.71	3.46
MEAN	2.45	2.89	2.67

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GRAIN TONNES/HECTARE

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

INOCULNT STRAW	0	B+W+C	W+C	C	MEAN
0.0	3.09	3.01	2.95	3.12	3.04
7.5	2.39	2.37	2.24	2.17	2.29
MEAN	2.74	2.69	2.59	2.65	2.67

INOCULNT SEEDBD N	0	B+W+C	W+C	C	MEAN
30	1.99	1.99	1.99	1.82	1.95
90	2.81	2.48	2.51	2.59	2.60
150	3.43	3.61	3.26	3.53	3.46
MEAN	2.74	2.69	2.59	2.65	2.67

INOCULNT WINTER N	0	B+W+C	W+C	C	MEAN
0	2.61	2.51	2.27	2.41	2.45
30	2.87	2.88	2.92	2.89	2.89
MEAN	2.74	2.69	2.59	2.65	2.67

STRAW	WINTER N SEEDBD N	0	30
0.0	30	2.07	2.53
	90	2.76	3.20
	150	3.57	4.12
7.5	30	1.52	1.67
	90	1.93	2.50
	150	2.84	3.30

STRAW	INOCULNT SEEDBD N	0	B+W+C	W+C	C
0.0	30	2.19	2.45	2.24	2.32
	90	3.23	2.77	2.81	3.11
	150	3.86	3.82	3.79	3.93
7.5	30	1.79	1.53	1.75	1.31
	90	2.39	2.20	2.22	2.06
	150	3.00	3.40	2.74	3.13

STRAW	INOCULNT WINTER N	0	B+W+C	W+C	C
0.0	0	2.82	2.84	2.56	2.99
	30	3.36	3.19	3.33	3.26
7.5	0	2.41	2.18	1.97	1.83
	30	2.38	2.57	2.50	2.51

SEEDBD N	INOCULNT WINTER N	0	B+W+C	W+C	C
30	0	2.03	1.94	1.49	1.71
	30	1.95	2.04	2.50	1.92
90	0	2.60	2.07	2.33	2.37
	30	3.01	2.90	2.70	2.81
150	0	3.20	3.51	2.98	3.13
	30	3.66	3.71	3.55	3.93

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

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GRAIN TONNES/HECTARE

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

TABLE	STRAW	SEEDBD N	WINTER N	INOCULNT
SED	**	**	0.089	0.126

TABLE	STRAW SEEDBD N	STRAW* WINTER N	SEEDBD N* WINTER N	STRAW* INOCULNT
SED	**	0.126	0.154	0.178

TABLE	SEEDBD N* INOCULNT	WINTER N INOCULNT	STRAW* SEEDBD N WINTER N	STRAW* SEEDBD N INOCULNT
	0.218	0.178	0.218	0.308

TABLE	STRAW* WINTER N INOCULNT	SEEDBD N* WINTER N INOCULNT
SED	0.251	0.308

* WITHIN SAME LEVEL OF STRAW,SEEDBD N OR STRAW SEEDBD N
** NO STANDARD ERROR AVAILABLE

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

STRATUM	DF	SE	CV%
WP.SP	6	0.308	11.5

GRAIN MEAN DM% 80.8

PLOT AREA HARVESTED 0.00217

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78/R/WS/2

SPRING WHEAT

INTEGRATED PEST CONTROL

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

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

Design: 3 randomised blocks of 4 plots.

Whole plot dimensions: 19.2 x 19.2.

Treatments:

TREATMNT	Chemical and biological treatments:
NONE	None (duplicated)
BIOLOGIC	Metarrhizium fungus applied as 4 x 10^{13} spores per hectare on rice grains applied at 800 kg on 17 May
MULTCHEM	Multiple chemical treatments: Chlorpyrifos at 2 kg on 17 March. Metaldehyde at 31.4 kg on 30 March. Omethoate at 0.2 kg on 2 June. Pirimicarb at 0.14 kg on 4 July

NOTE: It was intended to add to BIOLOGIC the release of aphids infected with Entomophthora. Natural aphids were few and this treatment was not applied. A planned additional treatment of aphicide only was also not applied for the same reason.

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: Sicco, seed not dressed, sown at 190 kg.

Cultivations, etc.:- Ploughed: 22 Nov, 1977. Spring-tine cultivated twice: 13 Mar, 1978. Seed sown: 15 Mar. Weedkiller applied: 18 May. Combine harvested: 15 Sept. Previous crops: Beans 1976, wheat 1977.

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

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GRAIN TONNES/HECTARE

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

TREATMNT	NONE	BIOLOGIC	MULTCHEM	MEAN
	5.43	5.44	5.85	5.54

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

TABLE	TREATMNT	
REP	UNEQUAL	
SED	0.146	MIN REP
	0.127	MAX-MIN

	TREATMENT
MAX-MIN	NONE V ANY OF REMAINDER
MIN REP	ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	7	0.179	3.2

GRAIN MEAN DM% 80.8

PLOT AREA HARVESTED 0.00410

https://doi.org/10.23637/ERADOC-1-30 *pp 40*

78/R/WS/3

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 - Summerdells I.

Sponsor: R.A. Hill.

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

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 at 1.1 kg

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

	10 July	20 July	11 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

NOTE: Treatment sprays were applied in 340 l.

Basal applications: Manures: (20:14:14) at 440 kg, combine drilled. Weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Timmo, sown at 190 kg.

Cultivations, etc.:- Chisel ploughed twice: 8 and 10 Nov, 1977. Spring-tine cultivated twice and seed sown: 13 Mar, 1978. Weedkiller applied: 22 May. Combine harvested: 15 Sept. Previous crops: Winter oats 1976, potatoes 1977.

NOTE: Grain microflora were assessed weekly after heading. Thousand grain weights were measured, and grain was assessed for germination, vigour and breadmaking quality.

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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	6.50	6.75	6.18	6.35	6.82	6.55	6.80	6.57
CARB+MAN	6.86	6.50	6.38	6.71	6.55	6.82	6.86	6.67
BENOMYL	6.38	6.50	6.25	6.53	6.48	6.62	6.71	6.50
MEAN	6.58	6.59	6.27	6.53	6.62	6.66	6.79	6.58

APP TIME NONE 6.31

GRAND MEAN 6.54

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

TABLE	FUNGCIDE	APP TIME	FUNGCIDE APP TIME
SED	0.098	0.150	0.259

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

STRATUM	DF	SE	CV%
BLOCK.WP	25	0.259	4.0

GRAIN MEAN DM% 80.5

PLOT AREA HARVESTED 0.00195

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

78/R/WS/4

SPRING WHEAT

IRRIGATION, LODGING, CCC AND MICROFLORA

Object: To study the effects of irrigation, artificial lodging and a growth regulator on grain microflora and yield - Long Hoos IV 4.

Sponsor: R.A. Hill.

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

Whole plot dimensions: 8.53 x 9.75.

Treatments: All combinations of:-

Whole plots

1.	IRRIGATN	Irrigation:
	NONE	None
	FULL	Full (108 mm)

Sub plots

2.	LODGING	Lodging:
	NONE	None, supported by netting
	LODGED	Lodged, under netting
3.	GRWTHREG	Growth regulator:
	NONE	None
	CHLORMEQ	Chlormequat (CCC) at 1.1 kg in 340 l on 19 June, 1978.

NOTES: (1) Lodging treatment was applied on 1 Aug, 1978.
(2) Irrigation was applied at 9 mm on each dry day between 11 Aug and harvest (11, 16, 17, 18, 21, 23, 24, 25 and 29 August and 5, 8 and 11 Sept).

Basal applications: Manures (0:14:28) at 720 kg. 'Nitro-chalk 25' at 500 kg combine drilled. Weedkillers: Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 l in 340 l).

Seed: Timmo, sown at 180 kg.

Cultivations, etc.:- PK applied: 30 Sept, 1977. Ploughed: 6 Oct. Power harrowed: 31 Mar, 1978. Seed sown: 5 Apr. Weedkillers applied: 11 May. Combine harvested: 19 Sept.

NOTE: Grain microflora were assessed weekly after lodging and at harvest. 1000 grain weights were taken and grain assessed for mycotoxins, germination percentage and seedling vigour.

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78/R/WS/4

GRAIN TONNES/HECTARE

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

LODGING IRRIGATN	NONE	LODGED	MEAN
NONE	5.15	2.47	3.81
FULL	4.80	1.69	3.24
MEAN	4.97	2.08	3.53

GRWTHREG IRRIGATN	NONE	CHLORMEQ	MEAN
NONE	3.81	3.81	3.81
FULL	3.06	3.43	3.24
MEAN	3.43	3.62	3.53

GRWTHREG LODGING	NONE	CHLORMEQ	MEAN
NONE	4.77	5.17	4.97
LODGED	2.10	2.07	2.08
MEAN	3.43	3.62	3.53

LODGING	NONE		LODGED	
GRWTHREG	NONE	CHLORMEQ	NONE	CHLORMEQ
IRRIGATN				
NONE	5.02	5.29	2.60	2.34
FULL	4.53	5.06	1.59	1.79

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

TABLE	LODGING	GRWTHREG	IRRIGATN* LODGING
SED	0.119	0.119	0.168

TABLE	IRRIGATN* GRWTHREG	LODGING GRWTHREG	IRRIGATN* LODGING GRWTHREG
SED	0.168	0.168	0.238

* WITHIN SAME LEVEL OF IRRIGATN ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	18	0.336	9.5

GRAIN MEAN DM% 84.4

SUB PLOT AREA HARVESTED 0.00087

https://doi.org/10.23637/ERADOC-1-30 *pp 44*