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## Yields of the Field Experiments 1971

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### Annuals - Wheat

#### Rothamsted Research

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71/R/WW/1 and 71/W/WW/1

WINTER WHEAT

VARIETIES AND N

**Object:** To study the yield of newer varieties of wheat grown at a range of nitrogen levels on land in rotation or after several cereals - Rothamsted (R) Summerdells I (pathogen free) and Claycroft (pathogen infected), and Woburn (W) White Horse Field (pathogen free).

**Design:** 3 randomised blocks of 8 plots, split into 4.

**Whole plot dimensions:-** Summerdells (R): 4.27 x 36.9. Claycroft (R) and White Horse Field (W): 4.27 x 39.3. Sub plot area harvested: Summerdells (R): 0.00243. Claycroft (R) and White Horse Field (W): 0.00260.

**Treatments:** All combinations of:-

**Whole plots:** 1. Varieties: Champlein (CH), Cama (CM), Cappelle (CP), Joss Cambier (JC), Maris Beacon (MB), Maris Nimrod (MN), Maris Widgeon (MW), Tommy (TO).

**Sub plots:** 2. Rates of nitrogen (in kg N): 63, 126, 189 in spring, and 126 in spring plus 63 at flowering. All N as 'Nitro-Chalk'.

**Basal applications:-**

All fields: 314 kg (8:20:16) combine drilled. Weedkiller: 2,4-D at 0.56 kg plus dichlorprop at 2.2 kg in 225 l (281 l on White Horse Field (W)).

Claycroft (R) only: Weedkiller: Paraquat at 0.28 kg ion in 225 l.

**Cultivations, etc.:**

Summerdells (R): Ploughed: 18 Sept, 1970. Seed combine drilled at 200 kg: 8 Oct. Weedkiller applied: 13 Apr, 1971. Spring N applied: 16 Apr. Late N applied: 3 June. Combine harvested: 26 Aug. Previous crops: Spring beans 1969 and 1970.

Claycroft (R): Paraquat applied: 17 Sept, 1970. Deep-tine cultivated: 23 Sept. Deep-tine cultivated 2nd time: 5 Oct. Seed combine drilled at 200 kg: 8 Oct. Weedkiller applied: 13 Apr, 1971. Spring N applied: 16 Apr. Late N applied: 3 June. Combine harvested: 26 Aug. Previous crops: Winter wheat 1969 and 1970.

71/R/WW/1 and 71/W/WW/1

White Horse Field (W): Deep-tine cultivated: 12 Oct, 1970. Seed combine drilled at 191 kg: 13 Oct. Weedkiller applied: 31 Mar, 1971. Spring N applied: 15 Apr. Late N applied: 3 June. Combine harvested: 27 Aug. Previous crops: Fallow 1969, potatoes 1970.

Standard errors per plot.	Grain, tonnes/hectare:
Summerdells (R):	Whole plot: 0.433 or 6.3% (14 d.f.)
	Sub plot: 0.492 or 7.1% (48 d.f.)
Claycroft (R):	Whole plot: 0.300 or 4.5% (14 d.f.)
	Sub plot: 0.661 or 9.8% (48 d.f.)
White Horse Field (W):	Whole plot: 0.225 or 4.0% (14 d.f.)
	Sub plot: 0.349 or 6.2% (48 d.f.)

71/R/WW/1 and 71/W/WW/1

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

	CH	CM	CP	JC	MB	MN	MW	TO	Mean
SUMMERDELLS (R) PATHOGEN FREE									
N: KG/HA	(1) and (2)								(±0.100)
63	7.73	7.35	6.57	7.28	7.11	8.60	6.13	6.71	7.18
126	8.12	6.87	7.04	7.09	6.24	7.71	5.84	7.24	7.02
189	7.77	6.73	6.43	6.37	5.36	6.06	5.76	6.90	6.42
126+63	7.93	7.03	7.04	7.09	6.01	7.34	6.28	7.36	7.01
Mean (±0.250)	7.89	6.99	6.77	6.96	6.18	7.43	6.00	7.05	6.91

(1) (±0.351) For use in horizontal and interaction comparisons only  
 (2) (±0.284) For use in vertical and diagonal comparisons only

Mean D.M. %: 81.5

CLAYCROFT (R) PATHOGEN INFECTED

N: KG/HA	(1) and (2)								(±0.135)
63	6.43	5.72	5.75	6.85	7.15	7.14	5.43	6.33	6.35
126	7.21	6.36	6.19	6.81	7.38	8.24	5.96	6.84	6.87
189	6.97	6.95	6.48	6.51	5.96	7.57	5.82	6.64	6.61
126+63	7.51	6.59	6.74	7.14	7.38	8.06	6.11	6.64	7.02
Mean (±0.173)	7.03	6.40	6.29	6.83	6.97	7.75	5.83	6.61	6.71

(1) (±0.373) For use in horizontal and interaction comparisons only  
 (2) (±0.381) For use in vertical and diagonal comparisons only

Mean D.M. %: 82.0

TL/R/WW/1 and TL/W/WW/1

GRAIN: TONNES/HECTARE

WHITE HORSE FIELD (W) PATHOGEN FREE

	CH	CM	CP	JC	MB	MN	MW	TO	Mean
N: KG/HA	(1) and (2)								(±0.071)
63	5.57	5.73	5.40	5.56	5.82	5.75	5.16	5.59	5.57
126	6.39	5.65	6.20	5.49	6.49	6.50	5.42	5.61	5.97
189	5.78	4.87	5.31	4.37	5.82	6.45	4.88	4.86	5.29
126+63	5.72	5.40	5.68	5.17	6.19	6.63	5.19	5.18	5.65
Mean (±0.130)	5.86	5.41	5.65	5.15	6.08	6.33	5.16	5.31	5.62

(1) (±0.218) For use in horizontal and interaction comparisons only  
 (2) (±0.202) For use in vertical and diagonal comparisons only

Mean D.M. %: 81.4

71/R/WW/2

WINTER WHEAT

SEPTORIA

Object: To study the effects of different amounts of seed infection on yield and incidence of Septoria - Great Knott II.

Design: 4 x 4 Latin square. Each whole plot was split into 5, the middle sub plot being treated, and the flanking ones untreated and used to assess Septoria spread.

Whole plot dimensions: 13.3 x 9.14. Sub plot area harvested: 0.00013.

Treatments: Infection with Septoria:-

None	(O)
Low infection	(L)
Medium infection	(M)
High infection	(H)

The levels of infection were achieved by mixing different quantities of Septoria infected seed with seed which had been disinfected by soaking in thiram fungicide. Levels of infection were reinforced by spraying plants with spore suspensions.

Basal applications: 380 kg (8:20:16) combine drilled and 600 kg 'Nitro-Chalk' in spring. Weedkiller: 2,4-D at 0.56 kg and dichlorprop at 2.24 kg in 225 l.

Cultivations, etc.: Deep-tine cultivated on two occasions: 6 and 7 Oct, 1970. Seed combine drilled at 202 kg: 22 Oct. Weedkiller applied: 14 Apr, 1971. N applied: 16 Apr. Combine harvested: 28 Aug. Variety: Champlain. Previous crops: Fallow 1969, potatoes 1970.

NOTE: (1) Seedling infection with Septoria was assessed and estimates made of foliar diseases at intervals.  
(2) The yields presented are from the treated sub plots only.

Standard error per sub plot.

Grain, tonnes/hectare: 0.228 or 2.8% (6 d.f.)

71/R/WW/2

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

O	L	M	H	Mean
		(±0.114)		
8.32	8.11	8.30	7.89	8.16

Mean D.M. %: 82.6

71/R/WW/3

WINTER WHEAT

GAINES, SEED RATES, N AND CCC

Object: To study the effects of CCC (chlormequat) and a range of nitrogen levels on the semi-dwarf variety Gaines grown at two seed rates - Great Knott II.

Design: 2 randomised blocks of 9 plots split into 3.

Whole plot dimensions: 2.16 x 21.9. Sub plot area harvested: 0.00087.

Treatments:

Whole plots: All combinations of:-

1. Varieties and seed rates: Cappelle at 188 kg (CH), Gaines at 126 kg (GL), Gaines at 188 kg (GH).

2. Chlormequat: None, 1.12 kg, 2.24 kg in 337 l.

Sub plots:

3. Nitrogen: 75 kg, 150 kg, 300 kg N as 'Nitro-Chalk'.

Basal applications: 314 kg (0:20:20). Weedkiller: 2,4-D at 0.56 kg plus dichlorprop at 2.24 kg in 337 l.

Cultivations, etc.: Deep-tine cultivated twice: 6 Oct, 1970. Seed drilled, basal PK applied: 14 Oct. N applied: 16 Apr, 1971.

Weedkiller applied: 19 Apr. Chlormequat applied: 22 Apr. Combine harvested: 28 Aug. Previous crops: Fallow 1969, potatoes 1970.

NOTE: Shoot heights were measured and plant numbers counted. Samples were taken just before harvest for total dry matter and components of yield.

Standard error per plot.

Grain, tonnes/hectare: Whole plot: 0.093 or 1.4% (8 d.f.)

Sub plot: 0.401 or 6.2% (18 d.f.)



7L/R/WW/3

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

	CHLORMEQUAT: KG/HA			N: KG/HA			Mean
	0	1.12	2.24	75	150	300	
	(±0.065)			(1) and (2)			(±0.038)
CH	7.26	7.50	7.62	7.85	7.74	6.79	7.46
GL	5.74	5.87	5.75	6.23	5.84	5.29	5.78
GH	6.10	6.13	5.99	6.69	6.29	5.23	6.07
	CHLORMEQUAT: KG/HA			(1) and (2)			(±0.038)
	0			7.04	6.44	5.61	6.37
	1.12			6.85	6.85	5.79	6.50
	2.24			6.88	6.58	5.90	6.45
Mean (±0.095)				6.92	6.62	5.77	6.44

Mean D.M. %: 83.9

- (1) (±0.139) For use in vertical and diagonal comparisons only  
 (2) (±0.164) For use in horizontal and interaction comparisons only

71/R/WW/4

WINTER WHEAT

ETHREL, DUST AND SPRAY

Object: To compare the effects of 'Ethrel', applied as dust or spray, on height and yield of winter wheat - Great Knott II.

Design: 5 randomised blocks of 6 plots.

Whole plot dimensions: 2.16 x 6.71. Area harvested: 0.00087.

Treatments: 'Ethrel' (2-chloroethylphosphonic acid):

None (0)

Dust: 3.4 kg a.i. at 2-leaf stage (D2), at 4-leaf stage (D4), at 6-leaf stage (D6).

Spray: 1.1 kg a.i. in 337 l at 6-leaf stage (S6), at 8-leaf stage (S8).

Basal applications: 314 kg (0:20:20), 538 kg 'Nitro-Chalk'. Weedkiller: 2,4-D at 0.56 kg plus dichloprop at 2.24 kg in 337l.

Cultivations, etc.: Deep-tine cultivated twice: 6 Oct, 1970. Seed drilled at 188 kg, basal PK applied: 14 Oct. Dusts applied: D2 - 3 Dec, D4 - 5 Feb, 1971. Weedkiller applied: 19 Apr. N applied: 21 Apr. D6 and S6 treatments applied: 22 Apr, S8: 21 May. Combine harvested: 28 Aug. Variety: Cappelle, Previous crops: Fallow 1969, potatoes 1970.

NOTE: Shoot heights were measured and plant numbers counted. Samples were taken just before harvest for total dry matter and components of yield.

Standard error per plot.

Grain, tonnes/hectare: 0.255 or 3.3% (20 d.f.).

71/R/WW/4

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

0	D2	D4	D6	S6	S8	Mean
<hr/>						
( $\pm 0.114$ )						
8.09	7.61	7.89	7.75	7.95	7.17	7.74

Mean D.M.%: 83.0

71/R/WW/5

WINTER WHEAT

WEEDKILLER AND AQUEOUS N

Object: To study the effects of a combined spray of liquid nitrogen fertiliser and a hormone weedkiller as a top dressing on wheat - Great Knott II.

Design: 4 randomised blocks of 28 plots.

Whole plot dimensions: 2.13 x 2.74. Area harvested: 0.00038.

Treatments: All combinations of:-

1. Weedkiller (dichlorprop/MCPA): None (H0), 1.40 (H1), 2.80 (H2), 4.20 (H3) kg total a.e.
2. Forms of nitrogen: Solid, as 'Nitro-Chalk' (21% N) applied immediately after the weedkiller (S), liquid, as urea/ammonium nitrate (26% N) mixed with the weedkiller (L).
3. Rates of nitrogen: 37.7, 75.3, 113.0 kg N.

Together with 4 additional treatments

SN2 E H0, SN2 E H1, SN2 E H2, SN2 E H3 (N2 = 75.3)

where 'Nitro-Chalk' was applied early (E) and the H0 plots were hand weeded.

NOTE: The weedkiller was applied in 337 l where solid fertiliser was used. The liquid fertiliser (with or without weedkiller) was applied as a spray in 112, 225, 337 l for rates 1, 2 and 3 respectively.

Basal applications: 377 kg (0:20:20) combine drilled.

Cultivations, etc.: Deep-tine cultivated: 6 Oct, 1970. Deep-tine cultivated second time: 7 Oct. Seed combine drilled at 202 kg: 14 Oct. N applied to E plots: 7 Apr, 1971. Remaining N treatments and weedkiller applied: 21 Apr. H0 plots hand weeded: 3 June. Cut by sickle: 18 Aug, Variety: Cappelle. Previous crops: Fallow 1969, potatoes 1970.

71/R/WW/5

NOTE: Soil samples were taken for pH in April. Scores were made of weedkiller scorch, growth and colour of crop and weed control. Weeds were identified on HO plots, and their dry matter determined. Plots were examined in July for ear deformities from spraying. Thousand grain weights and the percentage of N in grain and straw were determined.

Standard error per plot.

Grain, tonnes/hectare: 0.386 or 6.2% (69 d.f.)

71/R/WW/5

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

	H0	H1	H2	H3	Mean
		(±0.112)			(±0.056)
S	6.29	6.35	6.38	6.41	6.36
L	6.03	6.11	5.97	6.04	6.04
N: KG/HA		(±0.137)			(±0.068)
37.7	5.65	5.42	5.62	5.63	5.58
75.3	6.34	6.38	6.26	6.47	6.36
113.0	6.49	6.88	6.65	6.59	6.65
Mean (±0.079)	6.16	6.23	6.18	6.23	6.20

	N: KG/HA		
	37.7	75.3	113.0
		(±0.097)	
S	5.72	6.52	6.83
L	5.44	6.20	6.47

SN2 E H0 6.63  
 SN2 E H1 6.41 (±0.193)  
 SN2 E H2 6.59  
 SN2 E H3 6.33

General mean: 6.24

Mean D.M. %: 81.5

71/R/WW/5

STRAW: TONNES/HECTARE

	H0	H1	H2	H3	Mean
S	9.75	9.30	9.05	9.21	9.33
L	9.37	9.03	8.71	8.68	8.95
N: KG/HA					
37.7	8.93	8.08	8.15	8.09	8.31
75.3	9.54	9.34	9.04	9.26	9.30
113.0	10.21	10.07	9.46	9.48	9.81
Mean	9.56	9.16	8.88	8.94	9.14

N: KG/HA

	37.7	75.3	113.0
S	8.46	9.56	9.96
L	8.16	9.03	9.65

SN2 E H0 10.35  
 SN2 E H1 10.08  
 SN2 E H2 9.23  
 SN2 E H3 10.29

General mean: 9.26

Mean D.M. %: 57.9

71/R/WW/6 and 71/BB/WW/6

WINTER WHEAT

GROWTH AND YIELD ON CONTRASTED SITES

**Object:** To try to account for yields and differences between yields of wheat on sites at Rothamsted and Broom's Barn by studying crop growth rates, nutrient uptake, water use etc. at a wide range of nitrogen levels, with and without irrigation. Also to study the interaction between site differences and crops (see also 71/R & BB/B/1) - Rothamsted (R) Great Knott II and Broom's Barn (BB) Flint Ridge Field.

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

**Whole plot dimensions:-**

Great Knott II (R): 13.7 x 48. Sub plot area harvested: 0.00390.  
Flint Ridge Field (BB): 15.2 x 45.7. Sub plot area harvested:  
0.00413.

**Treatments: All combinations of:-**

Whole plots: 1. Irrigation: None (O), full irrigation (I).  
Sub plots: 2. Nitrogen: 31, 63, 94, 125, 157, 188 kg N as  
'Nitro-Chalk'.

Total irrigation was 61.0 mm applied on four occasions (R) and  
76.7 mm applied on four occasions (BB).

**Basal applications:**

Great Knott II (R): 1260 kg (0:20:20) plus 900 kg Epsom salts in  
seedbed. 380 kg (8:20:16) combine drilled.

Flint Ridge Field (BB): In seedbed, as above. 392 kg (8:20:16)  
combine drilled.

Weedkiller (both fields):- 2,4-D at 0.56 kg plus dichlorprop at  
2.24 kg in 225 l.

Fungicide (both fields): - Tridemorph at 0.47 kg in 427 l.

**Cultivations, etc.:-**

Great Knott II (R): Deep-tine cultivated on 2 occasions: 6 Oct  
and 7 Oct, 1970. Basal PK and Epsom salts applied: 12 Oct.  
Seed combine drilled at 202 kg: 13 Oct. Weedkiller applied:  
14 Apr, 1971. N applied: 16 Apr. Fungicide applied: 12 May.



71/R/WW/6 and 71/BB/WW/6

Irrigated: 14 May - 5.08 mm, 19 May - 5.08 mm, 20 May - 25.4 mm,  
7 June - 25.4 mm. Combine harvested: 27 Aug. Variety: Cappelle.  
Previous crops: Fallow 1969, potatoes 1970.  
Flint Ridge Field (BB): Ploughed: 1 Sept, 1970. Rotary cultivated:  
19 Sept. Epsom salts applied: 7 Oct. Basal PK applied, seed  
combine drilled at 202 kg: 12 Oct. N applied: 19 Apr, 1971.  
Weedkiller applied: 28 Apr. Fungicide applied: 10 May. Irrigated:  
11 May - 3.8 mm, 14 May - 25.4 mm, 21 May - 26.7 mm, 26 May -  
20.8 mm. Combine harvested: 25 Aug. Variety: Cappelle.  
Previous crop: 1 year ley for hay 1970.

NOTE: At Rothamsted straw was gathered by pick-up baler. At Broom's Barn  
straw was collected on a sheet behind the combine.

Standard errors per plot.

Grain, tonnes/hectare: Great Knott III (R): Sub plot: 0.335 or 4.8%  
(20 d.f.)

Flint Ridge Field (BB): Sub plot: 0.454 or 7.6%  
(20 d.f.)

7L/R/WW/6 and 7L/EB/WW/6

SUMMARY OF RESULTS

GREAT KNOTT II (R)

N: KG/HA

	31	63	97	125	157	188	Mean
GRAIN: TONNES/HECTARE							
(±0.193)*							
O	7.40	7.22	7.54	6.73	6.36	5.98	6.87
I	6.98	7.36	7.24	6.91	6.60	6.45	6.92
Mean (±0.137)	7.19	7.29	7.39	6.82	6.48	6.21	6.90

\* For use in horizontal and interaction comparisons only

STRAW: TONNES/HECTARE

O	6.50	7.10	6.76	7.23	7.37	6.54	6.92
I	6.58	7.17	7.19	7.33	8.23	7.44	7.32
Mean	6.54	7.13	6.98	7.28	7.80	6.99	7.12

Mean D.M. %: Grain: 80.9  
Straw: 83.9

71/R/WW/6 and 71/BB/WW/6

FLINT RIDGE FIELD (BB)

N: KG/HA

	31	63	94	125	157	188	Mean
GRAIN: TONNES/HECTARE (±0.262)*							
O	4.61	5.56	5.64	6.06	6.35	6.36	5.76
I	5.13	5.74	6.40	6.80	6.88	6.36	6.22
Mean (±0.185)	4.87	5.65	6.02	6.43	6.61	6.36	5.99

\* For use in horizontal and interaction comparisons only

STRAW: TONNES/HECTARE

O	4.42	5.64	5.51	6.04	6.39	6.35	5.73
I	5.27	6.08	6.57	7.76	7.35	7.76	6.80
Mean	4.85	5.86	6.04	6.90	6.87	7.05	6.26

Mean D.M. %: Grain: 82.6  
Straw: 77.4

71/R/WW/7

WINTER WHEAT

SYSTEMIC FUNGICIDES

Object: To study the effects of a range of systemic fungicides on yield and pathogens of wheat - West Barnfield II.

Design: 3 randomised blocks of 9 plots.

Whole plot dimensions: 2.67 x 9.14. Area harvested: 0.00087.

Treatments:

No fungicide (plus 337 l) (2 plots per block) (O)  
and

Seed dressings	Sprays (applied on two occasions)	
Benomyl 0.28 kg	1.12 kg in 337 l	(B)
Ethirimol 1.12 kg	1.12 kg in 337 l	(E)
Furidazole 0.28 kg	1.12 kg in 674 l	(F)
EL 273 0.034 kg a.i.	44.5 ml a.i. in 337 l	(L)
Organo-mercury 0.42 kg of formulated material	Nil (plus 337 l)	(M)
Thiophanate methyl 1.35 kg	1.68 kg in 337 l	(T)
W524 0.42 kg a.i.	400 ml a.i. in 674 l	(W)

Basal applications: 380 kg (8:20:16) combine drilled. 600 kg 'Nitro-Chalk' in spring. Weedkiller: Paraquat at 0.28 kg ion in 225 l.

Cultivations, etc.: Paraquat applied: 18 Sept, 1970. Ploughed: 25 Sept. Seed combine drilled at 179 kg: 16 Oct. N applied: 14 Apr, 1971. Fungicide sprays applied: 4 May, 2 June. Combine harvested: 27 Aug. Variety: Cama\*. Previous crops: Barley 1969, winter wheat 1970.

\* Variety susceptible to eyespot (*Cercospora herpotrichoides*) and mildew (*Erysiphe graminis*).

NOTE: Samples were taken for mildew (*Erysiphe graminis*), yellow rust (*Puccinia striiformis*), *Septoria* and foot and root diseases.

Standard error per plot.

Grain, tonnes/hectare: 0.361 or 6.0% (16 d.f.)

71/R/WW/7

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

O*	B	E	F	L	M	T	W	Mean
(±0.147)				(±0.208)				
6.10	6.31	6.01	5.82	5.51	6.08	6.30	5.61	5.98

Mean D.M. %: 82.9

\* Duplicated level

71/R/WW/8

WINTER WHEAT

BENOMYL AND EYESPOT

Object: To test the effects of benomyl on the yields and incidence of eyespot (*Cercospora herpotrichoides*) of winter wheat - West Barnfield II.

Design: 3 randomised blocks of 12 plots.

Whole plot dimensions: 2.67 x 9.14. Area harvested: 0.00124.

Treatments: All combinations of:-

1. Varieties: Cappelle (C), Gaines (G).
2. Seed dressings and sprays: None (O) 2 plots per block, organo-mercury seed dressing at 2.24 g per kg of seed (MD), benomyl seed dressing at 1.56 g per kg of seed (BD), benomyl spray at 1.12 kg in 1120 l (BS), benomyl seed dressing and spray each at above rates (BDS).

Basal applications: 380 kg (8:20:16) combine drilled. 600 kg 'Nitro-Chalk' in spring. Weedkiller: Paraquat at 0.28 kg ion in 225 l.

Cultivations, etc.: Paraquat applied: 18 Sept, 1970. Ploughed: 25 Sept. Seed combine drilled at 179 kg: 14 Oct. Benomyl sprays applied: 23 Mar, 1971. N applied: 14 Apr. Combine harvested: 27 Aug. Previous crops: Barley 1969, winter wheat 1970.

NOTE: Samples were taken for estimation of eyespot (*Cercospora herpotrichoides*) and sharp eyespot (*Rhizoctonia solani*) in spring and at harvest.

Standard error per plot.

Grain, tonnes/hectare: 0.463 or 8.1% (22 d.f.)

71/R/WW/8

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

	Q*	MD	BD	BS	BDS	Mean
	(±0.189)		(±0.267)			(±0.109)
C	6.18	6.48	5.91	6.19	6.71	6.28
G	5.06	5.07	4.94	5.45	5.36	5.16
Mean	5.62 (±0.134)	5.77	5.42 (±0.189)	5.82	6.04	5.72

Mean D.M. %: 82.2

\* Duplicated level

71/R/WS/2

SPRING WHEAT

ETHREL, DUST AND SPRAY

Object: To compare the effects of 'Ethrel', applied as dust or spray, on height and yield of spring wheat - Long Hoos IV.

Design: 6 randomised blocks of 6 plots.

Whole plot dimensions: 2.16 x 6.71. Area harvested: 0.00087.

Treatments: 'Ethrel' (2-chloroethylphosphonic acid):-

None (0)

Dust: 3.4 kg a.i. at 2-leaf stage (D2), at 4-leaf stage (D4), at 6-leaf stage (D6)

Spray: 1.1 kg a.i. in 337 l at 6-leaf stage (S6), at 8-leaf stage (S8)

Basal applications: 377 kg (20:10:10). Weedkiller: 2,4-D at 0.56 kg plus dichlorprop at 2.24 kg in 337 l.

Cultivations, etc.: Deep-tine cultivated on two occasions: 10 and 12 Oct, 1970. Seed drilled at 188 kg, basal NPK applied: 2 Apr, 1971. D2 treatment applied: 27 Apr. Weedkiller applied: 11 May. Remaining dusts applied: D4 - 19 May, D6 - 1 June. Sprays applied: S6 - 7 June, S8 - 16 June. Combine harvested: 2 Sept. Variety: Kolibri. Previous crops: Spring beans 1969, potatoes 1970.

NOTE: Shoot heights were measured and plant numbers counted. Samples were taken just before harvest for total dry matter and components of yield.

Standard error per plot.

Grain, tonnes/hectare: 0.479 or 16.7% (25 d.f.)



71/R/WS/2

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

0	D2	D4	D6	S6	S8	Mean
<hr/>						
		(±0.196)				
2.55	2.75	3.02	3.01	3.04	2.87	2.87

Mean D.M. %: 80.2

71/R/WS/3

SPRING WHEAT

DWARF SPRING WHEAT, VARIETIES, N AND CCC

Object: To study the effects of CCC (chlormequat) and a range of nitrogen levels on three semi-dwarf spring wheat varieties - Long Hoos IV.

Design: A single replicate of 4 x 4 x 4 in 4 blocks of 4 whole plots, split into 4 sub-plots, with split plot confounding of 3 factor interactions with blocks.

Whole plot dimensions: 2.16 x 29.6. Sub plot area harvested: 0.00087.

Treatments:

Whole plots: 1. Varieties: Benoist 257 (B), Inia (I), Kolibri (K), VR 6/57 (V).

Sub plots: All combinations of:-

2. Nitrogen: 75, 150, 225, 300 kg N as 'Nitro-chalk'.
3. Chlormequat: None, 1.12, 2.24, 3.36 kg in 337 l.

Basal applications: 336 kg (0:20:20). Weedkiller: 2,4-D at 0.56 kg plus dichlorprop at 2.24 kg in 337 l.

Cultivations, etc.: Deep-tine cultivated on 2 occasions: 10 and 12 Oct, 1970. Seed drilled at 188 kg, PK applied: 2 Apr, 1971. N applied: 16 Apr. Weedkiller applied: 11 May. Chlormequat applied: 21 May. Combine harvested: 2 Sept. Previous crops: Spring beans 1969, potatoes 1970.

NOTES: (1) Shoot heights were measured and plant numbers counted. Samples were taken just before harvest for components of yield and dry matter.

(2) Mildew (*Erysiphe graminis*) was severe on Inia and there was considerable bird damage on all plots.

Standard error per plot estimated from unconfounded 3 factor interaction.

Grain, tonnes/hectare: Whole plot: 0.297 or 8.6% (9 d.f.)  
Sub plot: 0.166 or 4.8% (15 d.f.)

71/R/WS/3

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

	N: KG/HA				CHLORMEQUAT: KG/HA				Mean
	75	150	225	300	0	1.12	2.24	3.36	
	(1) and (2)				(1) and (2)				(±0.149)
B	3.91	4.14	4.44	4.21	3.62	4.29	4.42	4.36	4.17
I	2.21	2.30	2.51	2.63	2.27	2.54	2.40	2.45	2.41
K	2.04	2.45	2.94	3.25	2.56	2.76	2.67	2.70	2.67
V	4.30	4.65	4.64	4.64	4.26	4.59	4.60	4.77	4.56
	N: KG/HA				(±0.083)				(±0.042)
			75		3.01	3.02	3.36	3.07	3.12
			150		3.00	3.69	3.32	3.53	3.38
			225		3.40	3.91	3.56	3.66	3.63
			300		3.29	3.57	3.86	4.02	3.68
Mean (±0.042)					3.18	3.55	3.52	3.57	3.45

Mean D.M. %: 81.9

- (1) (±0.165) For use in vertical and diagonal comparisons only  
 (2) (±0.083) For use in horizontal and interaction comparisons only

71/R/WS/7

SPRING WHEAT

EFFECTS OF BLUE/GREEN ALGAE

Object: To study the effects of blue/green algae, at a range of nitrogen levels, on yield of spring wheat - Garden Plot 2.

Design: 2 randomised blocks of 24 plots.

Whole plot dimensions: 2.16 x 4.42. Area harvested: 0.00062.

Treatments: All combinations of:-

1. Cultures: None (0), culture A (A), culture B (B).
2. Time of application: Early (E) on 3 May, 1971, late (L) on 16 June, 1971.
3. Nitrogen: None, 45, 90, 135 kg as 'Nitro-Chalk'.

Basal applications: 565 kg (0:20:20) ploughed down in Autumn.

Cultivations, etc.: PK applied, all plots ploughed: 11 Dec, 1970.  
Seed drilled at 188 kg: 29 Mar, 1971. N applied: 19 Apr. Combine harvested: 27 Aug. Variety: Sirius. Previous crops: Mixed cereals 1969, sugar beet 1970.

NOTE: The yields have been adjusted for a trend across the blocks.

Standard error per plot.

Grain, tonnes/hectare: 0.859 or 18.6% (22 d.f.)

71/R/WS/7

SUMMARY OF RESULTS

GRAIN: TONNES/HECTARE

N: KG/HA

	0	45	90	135	Mean
	(±0.430)				(±0.215)
O	4.05	4.53	3.83	6.42	4.71
A	3.62	5.08	5.09	5.23	4.75
B	3.44	4.98	4.30	4.91	4.41
Mean (±0.248)	3.71	4.86	4.40	5.52	4.62
	(±0.430)				(±0.215)
E	3.53	4.91	5.31	4.75	4.63
L	3.54	5.15	4.07	5.39	4.54
	E	L			
	(±0.304)				
A	4.75	4.76			
B	4.51	4.31			

Mean D.M. %: 79.4

NOTE: The 'no culture' yields were excluded from the tables involving time of application.