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Yields of the Field Experiments 1984

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Annals - Winter Wheat

Rothamsted Research

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84/R/WW/1 and 84/W/WW/1

WINTER WHEAT

VARIETIES

Object: To study a selection of the newer varieties of w. wheat and the effects of growth regulator on them on land in rotation (pathogen free) and after wheat (pathogen infected) - Rothamsted Fosters West (pathogen free RH) and Little Hoos (pathogen infected RD), Woburn Far Field I (pathogen free WH).

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

Design: 2 randomised blocks of 2 whole plots split into (RH) 13 (RD,WH) 11.

Sub plot dimensions: (RH) 3.0 x 12.0 , (RD) 3.0 x 10.0, (WH) 4.0 x 12.0.

Treatments: All combinations of:-

Whole plots

- | | |
|------------|--------------------------------|
| 1. GROWREG | Growth regulator: |
| NONE | None |
| CHLORMEQ | Chlormequat at 1.7 l in 250 l. |

Sub plots

- | | |
|------------|--------------------------------|
| 2. VARIETY | Varieties: |
| AVALON | Avalon (duplicated on RH only) |
| BRMSTONE | Brimstone |
| FENMAN | Fenman |
| GALAHAD | Galahad |
| Longbow | Longbow |
| MISSION | Mission |
| MOULIN | Moulin |
| NORMAN | Norman (duplicated on RH only) |
| RAPIER | Rapier |
| STETSON | Stetson |
| TR GRACE | Triticale, Grace |

Basal applications:

Fosters West (RH): Manures: N at 200 kg as 'Nitro-Chalk'.
Weedkillers: Mecoprop at 2.2 kg with isoproturon at 2.4 kg in 250 l.
Cyanazine at 0.24 l with mecoprop at 1.6 l in 250 l. Fungicides:
Carbendazim at 0.15 kg with tridemorph at 0.38 kg and maneb at 1.6 kg in 250 l. Insecticide: Pirimicarb at 0.14 kg in 250 l.
Little Hoos (RD): Manures: N at 50 kg and 160 kg as 'Nitro-Chalk'.
Weedkillers: Paraquat at 0.6 kg ion in 250 l. Mecoprop at 2.2 kg with isoproturon at 2.4 kg in 250 l. Cyanazine at 0.24 l with mecoprop at 1.6 l applied with the prochloraz and carbendazim in 250 l. Fungicides: Prochloraz at 0.4 kg with carbendazim at 0.15 kg. Carbendazim at 0.15 kg with tridemorph at 0.38 kg and maneb at 1.6 kg in 250 l. Insecticide: Pirimicarb at 0.14 kg in 250 l.

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Far Field I (WH): Manures: N at 50 kg and 140 kg as 'Nitro-Chalk'.
Fungicides: Prochloraz at 0.4 kg with carbendazim at 0.15 kg in
250 l. Propiconazole at 0.25 kg in 250 l. Insecticide: Pirimicarb
at 0.14 kg in 250 l.

Seed: Fosters West (RH), Little Hoos (RD): Varieties sown at 180 kg.
Far Field I (WH): Varieties sown at 190 kg.

Cultivations, etc.:-

Fosters West (RH): Ploughed: 15 Sept, 1983. Spring-tine cultivated:
12 Oct. Rotary harrowed, seed sown: 13 Oct. Mecoprop with
isoproturon applied: 9 Nov. N applied: 9 Apr, 1984. Cyanazine with
mecoprop applied: 17 Apr. Chlormequat applied: 25 Apr. Fungicides
applied: 13 June. Insecticide applied: 27 June. Combine harvested:
22 Aug. Previous crops: W. wheat 1982, w. beans 1983.

Little Hoos (RD): Heavy spring-tine cultivated twice: 23 Aug, 1983,
13 Oct. Paraquat applied: 26 Sept. Rotary harrowed, seed sown:
17 Oct. Mecoprop with isoproturon applied: 10 Nov. N applied:
10 Mar, 1984, 10 Apr. Cyanazine with mecoprop and prochloraz with
carbendazim applied 17 Apr. Chlormequat applied: 25 Apr.
Carbendazim with tridemorph and maneb applied: 13 June. Insecticide
applied: 27 June. Combine harvested: 22 Aug. Previous crops:
W. oats 1982, w. wheat 1983.

Far Field I (WH): Heavy spring-tine cultivated, spring-tine cultivated
with crumbler attached, seed sown: 4 Nov, 1983. N applied: 22 Mar,
1984, 30 Apr. Chlormequat applied, prochloraz with carbendazim
applied: 14 May. Propiconazole applied: 16 June. Insecticide
applied: 29 June. Combine harvested: 22 Aug. Previous crops:
S. barley 1982, potatoes 1983.

84/R/WW/1

HEALTHY SITE

GRAIN TONNES/HECTARE

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

GROWREG VARIETY	NONE	CHLORMEQ	MEAN
AVALON	11.94	11.65	11.79
BRMSTONE	12.75	12.45	12.60
FENMAN	11.66	11.46	11.56
GALAHAD	12.45	12.08	12.27
LONGBOW	12.28	12.03	12.15
MISSION	11.82	11.87	11.85
MOULIN	12.31	12.16	12.23
NORMAN	12.23	11.65	11.94
RAPIER	13.07	12.39	12.73
STETSON	12.06	11.64	11.85
TR GRACE	7.74	8.21	7.98
MEAN	11.85	11.60	11.72

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

TABLE	VARIETY	GROWREG* VARIETY	
SED	0.220	0.311	MIN REP
	0.191	0.270	MAX-MIN
	0.156	0.220	MAX REP

* WITHIN THE SAME LEVEL OF GROWREG ON

VARIETY
 MAX REP AVALON V NORMAN
 MAX-MIN AVALON OR NORMAN V ANY OF THE REMAINDER
 MIN REP ANY OF THE REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	28	0.311	2.7
GRAIN MEAN DM%	87.2		
SUB PLOT AREA HARVESTED	0.00245		

84/R/WW/1

DISEASED SITE

GRAIN TONNES/HECTARE

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

GROWREG VARIETY	NONE	CHLORMEQ	MEAN
AVALON	10.76	11.44	11.10
BRMSTONE	12.76	12.05	12.40
FENMAN	10.77	11.16	10.96
GALAHAD	11.82	12.05	11.93
LONGBOW	11.73	12.01	11.87
MISSION	10.16	11.13	10.64
MOULIN	11.01	11.19	11.10
NORMAN	12.00	11.91	11.95
RAPIER	11.74	12.62	12.18
STETSON	10.91	10.89	10.90
TR GRACE	7.16	7.71	7.44
MEAN	10.98	11.29	11.13

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

TABLE	VARIETY	GROWREG* VARIETY
-----	-----	-----
SED	0.312	0.441

* WITHIN THE SAME LEVEL OF GROWREG ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	20	0.441	4.0

GRAIN MEAN DM% 87.8

SUB PLOT AREA HARVESTED 0.00203

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GRAIN TONNES/HECTARE

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

GROWREG VARIETY	NONE	CHLORMEQ	MEAN
AVALON	10.63	10.03	10.33
BRMSTONE	9.69	9.82	9.76
FENMAN	10.96	10.31	10.64
GALAHAD	9.64	8.72	9.18
LONGBOW	10.11	9.21	9.66
MISSION	10.64	11.74	11.19
MOULIN	11.36	9.24	10.30
NORMAN	9.17	9.98	9.57
RAPIER	9.24	10.39	9.81
STETSON	10.52	9.70	10.11
TR GRACE	6.79	6.40	6.60
MEAN	9.89	9.59	9.74

TABLE	VARIETY	GROWREG* VARIETY
-----	-----	-----
SED	0.865	1.223

* WITHIN THE SAME LEVEL OF GROWREG ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	20	1.223	12.6
GRAIN MEAN DM%	86.9		
SUB PLOT AREA HARVESTED	0.00330		

84/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 w. wheat - Pastures.

Sponsors: R.D. Prew, N. Carter, B.M. Church, J. Lacey, A. Penny, R.T. Plumb, G.N. Thorne, A.D. Todd, R. M. Webb.

Associate sponsors: D.S. Jenkinson, A.H. Weir, P.J. Welbank, F.V. Widdowson.

Design: Half replicate of 2^8 + 54 extra plots, arranged in 4 blocks with PREVCROP on blocks.

Whole plot dimensions: 3.0 x 15.2.

Treatments: Combinations of:-

Blocks

1. PREVCROP	Previous cropping:
BARLEY	Potatoes 1981, w. wheat 1982, s. barley 1983
OATS	Potatoes 1981, w. wheat 1982, s. oats 1983

Whole plots

2. SOWDATE	Dates of sowing:
20 SEP	20 September, 1983
18 OCT	18 October
3. TOTAL N	Total amount of N fertilizer (kg N) as 'Nitro-Chalk':
160	
230	
4. N TIME	Timing of nitrogen fertilizer applications:
EARLY	3 Feb, 1984, 7 Mar, 2 May
LATE	7 Mar, 4 Apr, 14 May
5. GROWREG	Growth regulator:
NONE	None
CHLORMEQ	Chlormequat chloride + choline chloride (as 'New 5 C Cycocel' at 1.75 l) at Zadoks GS 30 on 3 Apr for SOWDATE 20 SEPT and 27 April for SOWDATE 18 OCT
6. SPR FUNG	Spring fungicide:
NONE	None
BENOMYL	Benomyl at 0.28 kg in 220 l on 10 April

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7. SUM FUNG Summer fungicide:
NONE None
PR+CA+MA Propiconazole at 0.12 kg, alone in 220 l on 30 May, with carbendazim at 0.25 kg and maneb at 1.6 kg in 220 l on 26 June

8. PESTCIDE Autumn and summer pesticides:
NONE None
AL+OM+PI Aldicarb at 7.0 kg worked into seedbed + omethoate at 0.63 l in 220 l on 10 Feb + pirimicarb at 0.14 kg in 220 l on 21 June

Plus all combinations of the following (all given chlormequat chloride + choline chloride, benomyl, propiconazole, carbendazim, maneb, aldicarb, omethoate, pirimicarb; the plots sown 15 Sept were given N timed early and plots sown 26 Oct given N timed late):

Blocks

1. PRECROPX Previous cropping:
BARLEY Potatoes 1981, w. wheat 1982, s. barley 1983
OATS Potatoes 1981, w. wheat 1982, s. oats 1983

Whole plots

2. SOWDATEX Dates of sowing:
20 SEPT 20 September, 1983
18 OCT 18 October

3. TOTAL NX Total amount of N fertilizer (kg N) as 'Nitro-Chalk':
0
125
195
265

Plus a half replicate of the following combinations (all trickle irrigated to lessen a deficit of 37.5 mm to 12.5 mm, and given chlormequat chloride + choline chloride, benomyl, propiconazole, carbendazim, maneb, aldicarb, omethoate and pirimicarb):

Blocks

1. PRECROPI Previous cropping:
BARLEY Potatoes 1981, w. wheat 1982, s. barley 1983
OATS Potatoes 1981, w. wheat 1982, s. oats 1983

Whole plots

2. SOWDATEI Dates of sowing:
20 SEPT 20 September, 1983
18 OCT 18 October

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3. TOTAL NI Total amount of N fertilizer (kg N) as 'Nitro-Chalk':

160
230

4. N TIMEI Timing of fertilizer application:

EARLY 3 February, 1984, 7 March, 2 May
LATE 7 March, 4 April, 14 May

5. AUT NI Autumn applied N fertilizer:

NONE None
AUT N 40 kg N applied to seedbed in addition to spring N

plus a half replicate of the following combinations (all grown after oats and given 160 kg N, propiconazole, carbendazim, maneb, aldicarb and pirimicarb but not given omethoate).

1. SOWDATEP Date of sowing:

20 SEPT 20 September, 1983
18 OCT 18 October

2. N TIMEP Timing of nitrogen fertilizer application:

EARLY 3 Feb, 1984, 7 Mar, 2 May
LATE 7 Mar, 4 Apr, 14 May

3. GROWREGP Growth regulator:

NONE None
CHLORMEQ Chlormequat + choline chloride (as 'New 5 C Cycocel' at 1.75 l) at Zadoks GS 30 on 3 April for SOWDATE 20 SEPT and 27 April for SOWDATE 18 OCT

4. SPR FUNP Spring fungicide:

NONE None
BENOMYL Benomyl at 0.28 kg in 220 l on 10 Apr

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Plus six extra treatments (all, except NONE plots, given chlormequat chloride + choline chloride, tridemorph, propiconazole, carbendazim, maneb, aldicarb, omethoate, pirimicarb):

EXTRA

SE GREGX Sown 20 Sept, after oats given additional chlormequat chloride + choline chloride (as 'New 5 C Cycocel' at 1.0 l) at Zadoks GS 13/21 on 10 Nov, 1983, and 230 kg N at N TIME EARLY (duplicated)
SL GREGX Sown 18 Oct, after oats given additional chlormequat chloride + choline chloride (as 'New 5 C Cycocel' at 1.0 l) at Zadoks GS 13/21 on 9 Feb, 1984 and 230 kg N at N TIME LATE (duplicated)
SE FAL Sown 20 Sept after fallow and given 230 kg N at N TIME EARLY (duplicated)
SL FAL Sown 18 Oct after fallow and given 230 kg N at N TIME LATE (duplicated)
SE NONE F Sown 20 Sept after fallow
SL NONE F Sown 18 Oct after fallow

NOTE: TOTAL N fertilizer was given in three applications, 40 kg N on the first and third dates for each N TIME the remainder on the second.

Basal applications: Manures: (0:18:36) at 420 kg. Weedkillers: Paraquat at 0.42 kg ion in 250 l. Chlortoluron at 3.5 kg in 250 l.

Seed: Avalon, sown at 170 kg.

Cultivations, etc.: - Heavy spring-tine cultivated: 22 Aug, 1983. PK applied: 5 Sept. Heavy spring-tine cultivated: 7 Sept. Paraquat applied: 19 Sept. Aldicarb applied for SOWDATE 20 SEPT, rotary harrowed, seed sown: 20 Sept. Aldicarb applied for SOWDATE 18 OCT, rotary harrowed, seed sown: 18 Oct. Chlortoluron applied: 20 Oct. Combine harvested: 21 Aug, 1984.

NOTE: Soil was sampled for nematodes, shoot borers, water and mineral N contents. Plants were assessed for foot and root rots throughout the season. The above-ground crop was examined for barley yellow dwarf virus, aphids, foliar diseases and microflora. Light interception, dry weight, leaf area, shoot numbers and N and K content of the above-ground crop and stem nitrate were measured on several occasions.

84/R/WW/3

GRAIN TONNES/HECTARE

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

SOWDATE	20 SEPT	18 OCT	MEAN
PREVCROP			
BARLEY	7.52	8.88	8.20
OATS	10.43	10.43	10.43
MEAN	8.98	9.65	9.32
TOTAL N	160	230	MEAN
PREVCROP			
BARLEY	7.80	8.61	8.20
OATS	10.08	10.78	10.43
MEAN	8.94	9.69	9.32
TOTAL N	160	230	MEAN
SOWDATE			
20 SEPT	8.62	9.34	8.98
18 OCT	9.26	10.05	9.65
MEAN	8.94	9.69	9.32
N TIME	EARLY	LATE	MEAN
PREVCROP			
BARLEY	8.12	8.28	8.20
OATS	10.36	10.49	10.43
MEAN	9.24	9.39	9.32
N TIME	EARLY	LATE	MEAN
SOWDATE			
20 SEPT	8.84	9.11	8.98
18 OCT	9.65	9.66	9.65
MEAN	9.24	9.39	9.32
N TIME	EARLY	LATE	MEAN
TOTAL N			
160	9.00	8.88	8.94
230	9.49	9.90	9.69
MEAN	9.24	9.39	9.32
GROWREG	NONE	CHLORMEQ	MEAN
PREVCROP			
BARLEY	8.04	8.36	8.20
OATS	10.34	10.52	10.43
MEAN	9.19	9.44	9.32

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GRAIN TONNES/HECTARE

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

GROWREG	NONE	CHLORMEQ	MEAN
SOWDATE			
20 SEPT	8.79	9.17	8.98
18 OCT	9.59	9.72	9.65
MEAN	9.19	9.44	9.32
GROWREG	NONE	CHLORMEQ	MEAN
TOTAL N			
160	8.71	9.17	8.94
230	9.67	9.71	9.69
MEAN	9.19	9.44	9.32
GROWREG	NONE	CHLORMEQ	MEAN
N TIME			
EARLY	9.16	9.33	9.24
LATE	9.22	9.56	9.39
MEAN	9.19	9.44	9.32
SPR FUNG	NONE	BENOMYL	MEAN
PREVCROP			
BARLEY	7.90	8.50	8.20
OATS	10.33	10.53	10.43
MEAN	9.12	9.51	9.32
SPR FUNG	NONE	BENOMYL	MEAN
SOWDATE			
20 SEPT	8.72	9.24	8.98
18 OCT	9.52	9.79	9.65
MEAN	9.12	9.51	9.32
SPR FUNG	NONE	BENOMYL	MEAN
TOTAL N			
160	8.69	9.19	8.94
230	9.54	9.84	9.69
MEAN	9.12	9.51	9.32
SPR FUNG	NONE	BENOMYL	MEAN
N TIME			
EARLY	9.03	9.46	9.24
LATE	9.21	9.57	9.39
MEAN	9.12	9.51	9.32

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GRAIN TONNES/HECTARE

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

SPR FUNG	NONE	BENOMYL	MEAN
GROWREG			
NONE	8.98	9.40	9.19
CHLORMEQ	9.26	9.63	9.44
MEAN	9.12	9.51	9.32
SUM FUNG	NONE	PR+CA+MA	MEAN
PREVCROP			
BARLEY	8.20	8.21	8.20
OATS	10.39	10.47	10.43
MEAN	9.29	9.34	9.32
SUM FUNG	NONE	PR+CA+MA	MEAN
SOWDATE			
20 SEPT	8.98	8.98	8.98
18 OCT	9.61	9.70	9.65
MEAN	9.29	9.34	9.32
SUM FUNG	NONE	PR+CA+MA	MEAN
TOTAL N			
160	8.94	8.94	8.94
230	9.65	9.73	9.69
MEAN	9.29	9.34	9.32
SUM FUNG	NONE	PR+CA+MA	MEAN
N TIME			
EARLY	9.26	9.23	9.24
LATE	9.33	9.45	9.39
MEAN	9.29	9.34	9.32
SUM FUNG	NONE	PR+CA+MA	MEAN
GROWREG			
NONE	9.18	9.20	9.19
CHLORMEQ	9.41	9.47	9.44
MEAN	9.29	9.34	9.32
SUM FUNG	NONE	PR+CA+MA	MEAN
SPR FUNG			
NONE	9.06	9.18	9.12
BENOMYL	9.53	9.50	9.51
MEAN	9.29	9.34	9.32

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GRAIN TONNES/HECTARE

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

PESTCIDE	NONE	AL+OM+PI	MEAN
PREVCROP			
BARLEY	8.29	8.11	8.20
OATS	10.12	10.74	10.43
MEAN	9.21	9.43	9.32

PESTCIDE	NONE	AL+OM+PI	MEAN
SOWDATE			
20 SEPT	8.87	9.08	8.98
18 OCT	9.54	9.77	9.65
MEAN	9.21	9.43	9.32

PESTCIDE	NONE	AL+OM+PI	MEAN
TOTAL N			
160	8.88	9.00	8.94
230	9.53	9.85	9.69
MEAN	9.21	9.43	9.32

PESTCIDE	NONE	AL+OM+PI	MEAN
N TIME			
EARLY	9.17	9.32	9.24
LATE	9.24	9.53	9.39
MEAN	9.21	9.43	9.32

PESTCIDE	NONE	AL+OM+PI	MEAN
GROWREG			
NONE	9.10	9.28	9.19
CHLORMEQ	9.32	9.57	9.44
MEAN	9.21	9.43	9.32

PESTCIDE	NONE	AL+OM+PI	MEAN
SPR FUNG			
NONE	8.92	9.31	9.12
BENOMYL	9.49	9.54	9.51
MEAN	9.21	9.43	9.32

PESTCIDE	NONE	AL+OM+PI	MEAN
SUM FUNG			
NONE	9.21	9.38	9.29
PR+CA+MA	9.20	9.47	9.34
MEAN	9.21	9.43	9.32

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GRAIN TONNES/HECTARE

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

SOWDATE	20 SEPT		18 OCT	
TOTAL N	160	230	160	230
PREVCROP				
BARLEY	7.09	7.96	8.51	9.25
OATS	10.15	10.72	10.01	10.84
SOWDATE	20 SEPT		18 OCT	
N TIME	EARLY	LATE	EARLY	LATE
PREVCROP				
BARLEY	7.40	7.65	8.85	8.91
OATS	10.28	10.58	10.44	10.41
TOTAL N	160		230	
N TIME	EARLY	LATE	EARLY	LATE
PREVCROP				
BARLEY	7.90	7.70	8.35	8.86
OATS	10.10	10.06	10.62	10.93
TOTAL N	160		230	
N TIME	EARLY	LATE	EARLY	LATE
SOWDATE				
20 SEPT	8.62	8.62	9.07	9.61
18 OCT	9.39	9.14	9.90	10.19
SOWDATE	20 SEPT		18 OCT	
GROWREG	NONE CHLORMEQ		NONE CHLORMEQ	
PREVCROP				
BARLEY	7.29	7.76	8.80	8.97
OATS	10.29	10.57	10.38	10.47
TOTAL N	160		230	
GROWREG	NONE CHLORMEQ		NONE CHLORMEQ	
PREVCROP				
BARLEY	7.44	8.16	8.64	8.57
OATS	9.97	10.19	10.70	10.85
TOTAL N	160		230	
GROWREG	NONE CHLORMEQ		NONE CHLORMEQ	
SOWDATE				
20 SEPT	8.37	8.86	9.21	9.47
18 OCT	9.04	9.49	10.14	9.95
N TIME	EARLY		LATE	
GROWREG	NONE CHLORMEQ		NONE CHLORMEQ	
PREVCROP				
BARLEY	8.05	8.20	8.04	8.53
OATS	10.27	10.45	10.40	10.59
N TIME	EARLY		LATE	
GROWREG	NONE CHLORMEQ		NONE CHLORMEQ	
SOWDATE				
20 SEPT	8.83	8.85	8.75	9.48
18 OCT	9.49	9.80	9.69	9.63

84/R/WW/3

GRAIN TONNES/HECTARE

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

N TIME	EARLY		LATE	
GROWREG	NONE	CHLORMEQ	NONE	CHLORMEQ
TOTAL N				
160	8.83	9.17	8.58	9.18
230	9.49	9.48	9.86	9.94
SOWDATE	20 SEPT		18 OCT	
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
PREVCROP				
BARLEY	7.16	7.89	8.64	9.12
OATS	10.27	10.59	10.39	10.46
TOTAL N	160		230	
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
PREVCROP				
BARLEY	7.40	8.20	8.41	8.80
OATS	9.99	10.17	10.67	10.88
TOTAL N	160		230	
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
SOWDATE				
20 SEPT	8.32	8.92	9.12	9.56
18 OCT	9.06	9.46	9.97	10.12
N TIME	EARLY		LATE	
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
PREVCROP				
BARLEY	7.80	8.45	8.01	8.55
OATS	10.26	10.47	10.40	10.59
N TIME	EARLY		LATE	
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
SOWDATE				
20 SEPT	8.59	9.10	8.85	9.38
18 OCT	9.47	9.82	9.57	9.76
N TIME	EARLY		LATE	
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
TOTAL N				
160	8.74	9.27	8.65	9.11
230	9.32	9.65	9.77	10.03
GROWREG	NONE		CHLORMEQ	
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
PREVCROP				
BARLEY	7.75	8.34	8.06	8.67
OATS	10.21	10.46	10.45	10.59
GROWREG	NONE		CHLORMEQ	
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
SOWDATE				
20 SEPT	8.48	9.09	8.95	9.38
18 OCT	9.48	9.71	9.56	9.88

84/R/WW/3

GRAIN TONNES/HECTARE

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

GROWREG	NONE	CHLORMEQ		
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
TOTAL N				
160	8.46	8.95	8.92	9.43
230	9.50	9.85	9.59	9.83
GROWREG	NONE	CHLORMEQ		
SPR FUNG	NONE	BENOMYL	NONE	BENOMYL
N TIME				
EARLY	8.93	9.39	9.12	9.53
LATE	9.03	9.41	9.39	9.73
SOWDATE	20 SEPT	18 OCT		
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
PREVCROP				
BARLEY	7.49	7.56	8.91	8.85
OATS	10.47	10.40	10.31	10.54
TOTAL N	160	230		
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
PREVCROP				
BARLEY	7.81	7.79	8.60	8.62
OATS	10.07	10.09	10.71	10.85
TOTAL N	160	230		
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
SOWDATE				
20 SEPT	8.67	8.56	9.28	9.39
18 OCT	9.20	9.32	10.02	10.07
N TIME	EARLY	LATE		
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
PREVCROP				
BARLEY	8.16	8.08	8.24	8.33
OATS	10.35	10.37	10.42	10.57
N TIME	EARLY	LATE		
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
SOWDATE				
20 SEPT	8.91	8.77	9.05	9.18
18 OCT	9.61	9.69	9.61	9.71
N TIME	EARLY	LATE		
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
TOTAL N				
160	9.07	8.94	8.81	8.95
230	9.45	9.52	9.85	9.94
GROWREG	NONE	CHLORMEQ		
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
PREVCROP				
BARLEY	8.09	8.00	8.31	8.41
OATS	10.27	10.40	10.50	10.53

84/R/WW/3

GRAIN TONNES/HECTARE

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

GROWREG	NONE		CHLORMEQ	
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
SOWDATE				
20 SEPT	8.81	8.77	9.15	9.18
18 OCT	9.55	9.63	9.67	9.77
GROWREG	NONE		CHLORMEQ	
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
TOTAL N				
160	8.82	8.59	9.05	9.29
230	9.54	9.81	9.76	9.65
GROWREG	NONE		CHLORMEQ	
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
N TIME				
EARLY	9.16	9.16	9.35	9.30
LATE	9.19	9.24	9.47	9.65
SPR FUNG	NONE		BENOMYL	
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
PREVCROP				
BARLEY	7.87	7.94	8.53	8.47
OATS	10.24	10.42	10.54	10.52
SPR FUNG	NONE		BENOMYL	
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
SOWDATE				
20 SEPT	8.59	8.84	9.36	9.11
18 OCT	9.52	9.52	9.70	9.88
SPR FUNG	NONE		BENOMYL	
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
TOTAL N				
160	8.55	8.83	9.32	9.05
230	9.56	9.53	9.74	9.94
SPR FUNG	NONE		BENOMYL	
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
N TIME				
EARLY	8.98	9.07	9.53	9.39
LATE	9.13	9.29	9.53	9.60
SPR FUNG	NONE		BENOMYL	
SUM FUNG	NONE	PR+CA+MA	NONE	PR+CA+MA
GROWREG				
NONE	8.86	9.09	9.49	9.31
CHLORMEQ	9.25	9.26	9.57	9.69
SOWDATE	20 SEPT		18 OCT	
PESTCIDE	NONE	AL+OM+PI	NONE	AL+OM+PI
PREVCROP				
BARLEY	7.69	7.36	8.89	8.87
OATS	10.06	10.81	10.18	10.67

84/R/WW/3

GRAIN TONNES/HECTARE

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

TOTAL N	160		230	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
PREVCROP				
BARLEY	8.00	7.60	8.59	8.63
OATS	9.76	10.40	10.48	11.08

TOTAL N	160		230	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
SOWDATE				
20 SEPT	8.61	8.62	9.14	9.54
18 OCT	9.15	9.37	9.92	10.17

N TIME	EARLY		LATE	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
PREVCROP				
BARLEY	8.23	8.02	8.35	8.21
OATS	10.11	10.62	10.13	10.86

N TIME	EARLY		LATE	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
SOWDATE				
20 SEPT	8.80	8.88	8.95	9.28
18 OCT	9.54	9.75	9.53	9.79

N TIME	EARLY		LATE	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
TOTAL N				
160	8.93	9.07	8.83	8.93
230	9.41	9.56	9.66	10.14

GROWREG	NONE		CHLORMEQ	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
PREVCROP				
BARLEY	8.18	7.90	8.41	8.32
OATS	10.01	10.66	10.23	10.81

GROWREG	NONE		CHLORMEQ	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
SOWDATE				
20 SEPT	8.67	8.91	9.08	9.25
18 OCT	9.52	9.66	9.55	9.88

GROWREG	NONE		CHLORMEQ	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
TOTAL N				
160	8.70	8.71	9.06	9.29
230	9.49	9.86	9.58	9.84

GROWREG	NONE		CHLORMEQ	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
N TIME				
EARLY	9.13	9.19	9.21	9.45
LATE	9.06	9.38	9.43	9.69

84/R/WW/3

GRAIN TONNES/HECTARE

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

SPR FUNG	NONE		BENOMYL	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
PREVCROP				
BARLEY	7.86	7.95	8.73	8.28
OATS	9.99	10.67	10.25	10.81
SPR FUNG	NONE		BENOMYL	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
SOWDATE				
20 SEPT	8.45	8.98	9.30	9.18
18 OCT	9.39	9.64	9.68	9.90
SPR FUNG	NONE		BENOMYL	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
TOTAL N				
160	8.67	8.72	9.09	9.28
230	9.18	9.91	9.88	9.80
SPR FUNG	NONE		BENOMYL	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
N TIME				
EARLY	8.84	9.21	9.50	9.42
LATE	9.00	9.41	9.48	9.66
SPR FUNG	NONE		BENOMYL	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
GROWREG				
NONE	8.80	9.16	9.39	9.41
CHLORMEQ	9.05	9.47	9.59	9.67
SUM FUNG	NONE		PR+CA+MA	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
PREVCROP				
BARLEY	8.40	8.00	8.19	8.22
OATS	10.02	10.76	10.22	10.72
SUM FUNG	NONE		PR+CA+MA	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
SOWDATE				
20 SEPT	8.96	9.00	8.79	9.16
18 OCT	9.46	9.76	9.62	9.78
SUM FUNG	NONE		PR+CA+MA	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
TOTAL N				
160	8.90	8.98	8.87	9.02
230	9.52	9.78	9.54	9.92
SUM FUNG	NONE		PR+CA+MA	
PESTCID	NONE	AL+OM+PI	NONE	AL+OM+PI
N TIME				
EARLY	9.18	9.34	9.16	9.30
LATE	9.23	9.42	9.25	9.65

84/R/WW/3

GRAIN TONNES/HECTARE

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

SUM FUNG	NONE	AL+OM+PI	PR+CA+MA	NONE	AL+OM+PI
PESTCIDE	NONE	AL+OM+PI	PR+CA+MA	NONE	AL+OM+PI
GROWREG					
NONE	9.16	9.19	9.03	9.37	
CHLORMEQ	9.25	9.57	9.38	9.57	

SUM FUNG	NONE	AL+OM+PI	PR+CA+MA	NONE	AL+OM+PI
PESTCIDE	NONE	AL+OM+PI	PR+CA+MA	NONE	AL+OM+PI
SPR FUNG					
NONE	8.86	9.25	8.98	9.37	
BENOMYL	9.55	9.51	9.42	9.57	

SOWDATEX	20 SEPT	18 OCT	MEAN		
PRECROPX					
BARLEY	6.13	7.71	6.92		
OATS	8.76	9.20	8.98		
MEAN	7.45	8.46	7.95		

TOTAL NX	0	125	195	265	MEAN
PRECROPX					
BARLEY	2.63	7.73	7.61	9.73	6.92
OATS	4.33	9.25	10.77	11.59	8.98
MEAN	3.48	8.49	9.19	10.66	7.95

TOTAL NX	0	125	195	265	MEAN
SOWDATEX					
20 SEPT	3.32	7.58	8.85	10.04	7.45
18 OCT	3.64	9.39	9.52	11.27	8.46
MEAN	3.48	8.49	9.19	10.66	7.95

SOWDATEI	20 SEPT	18 OCT	MEAN
PRECROPI			
BARLEY	8.11	9.62	8.87
OATS	10.62	11.20	10.91
MEAN	9.37	10.41	9.89

TOTAL NI	160	230	MEAN
PRECROPI			
BARLEY	8.28	9.45	8.87
OATS	10.84	10.98	10.91
MEAN	9.56	10.22	9.89

TOTAL NI	160	230	MEAN
SOWDATEI			
20 SEPT	8.93	9.80	9.37
18 OCT	10.18	10.64	10.41
MEAN	9.56	10.22	9.89

84/R/WW/3

GRAIN TONNES/HECTARE

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

N TIMEI	EARLY	LATE	MEAN
PRECROPI			
BARLEY	9.04	8.69	8.87
OATS	10.89	10.93	10.91
MEAN	9.97	9.81	9.89

N TIMEI	EARLY	LATE	MEAN
SOWDATEI			
20 SEPT	9.64	9.10	9.37
18 OCT	10.29	10.53	10.41
MEAN	9.97	9.81	9.89

N TIMEI	EARLY	LATE	MEAN
TOTAL NI			
160	9.73	9.38	9.56
230	10.20	10.24	10.22
MEAN	9.97	9.81	9.89

AUT NI	NONE	AUT N	MEAN
PRECROPI			
BARLEY	8.39	9.34	8.87
OATS	10.97	10.85	10.91
MEAN	9.68	10.10	9.89

AUT NI	NONE	AUT N	MEAN
SOWDATEI			
20 SEPT	9.42	9.31	9.37
18 OCT	9.94	10.89	10.41
MEAN	9.68	10.10	9.89

AUT NI	NONE	AUT N	MEAN
TOTAL NI			
160	9.53	9.58	9.56
230	9.83	10.61	10.22
MEAN	9.68	10.10	9.89

AUT NI	NONE	AUT N	MEAN
N TIMEI			
EARLY	9.64	10.29	9.97
LATE	9.72	9.90	9.81
MEAN	9.68	10.10	9.89

84/R/WW/3

GRAIN TONNES/HECTARE

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

N TIMEP	EARLY	LATE	MEAN
SOWDATEP			
20 SEPT	10.16	10.34	10.25
18 OCT	10.51	10.50	10.51
MEAN	10.33	10.42	10.38
GROWREGP	NONE	CHLORMEQ	MEAN
SOWDATEP			
20 SEPT	10.12	10.38	10.25
18 OCT	10.88	10.13	10.51
MEAN	10.50	10.25	10.38
GROWREGP	NONE	CHLORMEQ	MEAN
N TIMEP			
EARLY	10.55	10.12	10.33
LATE	10.45	10.39	10.42
MEAN	10.50	10.25	10.38
SPR FUNP	NONE	BENOMYL	MEAN
SOWDATEP			
20 SEPT	10.45	10.04	10.24
18 OCT	10.71	10.30	10.51
MEAN	10.58	10.17	10.38
SPR FUNP	NONE	BENOMYL	MEAN
N TIMEP			
EARLY	10.54	10.13	10.33
LATE	10.62	10.21	10.42
MEAN	10.58	10.17	10.38
SPR FUNP	NONE	BENOMYL	MEAN
GROWREGP			
NONE	10.70	10.29	10.50
CHLORMEQ	10.46	10.05	10.25
MEAN	10.58	10.17	10.38
EXTRA			
SE GREGX	10.89		
SL GREGX	11.51		
SE FAL	10.70		
SL FAL	11.51		
SE NONE F	7.27		
SL NONE F	8.55		
MEAN	10.50		

84/R/WW/3

GRAIN TONNES/HECTARE

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

SED APPLY TO MAIN FACTORIAL PLOTS ONLY

MARGINS OF TWO FACTOR TABLES	0.093*
TWO FACTOR TABLES	0.143**
THREE FACTOR TABLES	0.203**

* NOT INCLUDING PREVCROP

** WITHIN THE SAME LEVEL OF PREVCROP ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP	33	0.574	6.2

GRAIN MEAN DM% 87.1

PLOT AREA HARVESTED 0.00214

84/W/WW/3

WINTER WHEAT

SOIL COMPACTION AND YIELD

Object: To study the effects of disrupting a compact layer in a sandy soil on the physiology, growth and yield of winter wheat - Woburn, Butt Close III.

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

Associate sponsors: K.J. Parkinson, J.E. Leach, A.H. Weir, P.B. Barraclough.

Design: A single replicate of 2^5 + 12 extra plots.

Whole plot dimensions: 2.75 x 14.8.

Treatments: All combinations of:-

Whole plots

1. CULTIVTN Cultivations:

WYE DIG Deep cultivation with Wye double-digger
PLOUGH Normal cultivation with mouldboard plough

Sub plots

2. IRRIGATN Irrigation:

NONE None
FULL Full (175 mm) to lessen a deficit of 25 mm to 12.5 mm

3. WINTER N Amounts of nitrogen fertilizer applied on 30 Nov, 1983 and
31 Jan, 1984 (kg N) as urea:

0
35+35

4. SPRING N Amounts of nitrogen fertilizer applied in spring (kg N) as
'Nitro-Chalk':

115
185

5. N TIME Times of applying spring fertilizer:

EARLY All except 40 kg N on 8 Mar; remainder on 2 May
LATE All except 40 kg N on 3 Apr; remainder on 15 May

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plus all combinations of the following all given irrigation, winter nitrogen, and spring nitrogen timed early:-

Whole plots

1 CULTIVNX Cultivations:
WYE DIG Deep cultivations with Wye double-digger
PLOUGH Normal cultivations with mouldboard plough

Sub plots

2. SPRNG NX Amounts of nitrogen fertilizer applied in spring (kg N) as 'Nitro-Chalk':

80
150
220

Plus 2 nil nitrogen plots (given irrigation) and 4 root sampling plots (given winter nitrogen and 185 kg N applied late)

EXTRA

WY NO I Deep cultivation, irrigated
PL NO I Normal cultivation, irrigated
RWY N5 I Deep cultivation, irrigated
RWY N5 0 Deep cultivation
RPL N5 I Normal cultivation, irrigated
RPL N5 0 Normal cultivation

NOTES: (1) Deep cultivation was done with the Wye double-digger which turned a furrow with a conventional plough share to a depth of 25 cm and at the same time rotary cultivated the bottom of the adjacent furrow, in this case to a further depth of 23 cm.
(2) Normal cultivation was by mouldboard plough to a depth of 20 cm.

Irrigation treatment was applied as follows (mm water):

4 May	12.5	10 July	12.5
8 May	25	11 July	12.5
10-11 May	25	20 July	25
17 May	12.5	31 July	12.5
21 June	12.5	1 Aug	12.5
22 June	12.5		
		Total	175

Basal applications: Manures: (0:18:36) at 310 kg. Weedkiller: Chlortoluron at 3.5 kg in 280 l. Fungicides: Triadimefon at 0.06 kg with carbendazim at 0.13 kg in 280 l on two occasions, with the pirimicarb on the second. Insecticide: Pirimicarb at 0.14 kg. Nematicide: Aldicarb at 5.4 kg.

Seed: Avalon, sown at 170 kg.

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Cultivations, etc.:-

Cultivation treatments applied: 8-9 Sept, 1983. PK and nematicide applied, spring-tine cultivated: 19 Sept. Rotary cultivated, seed sown: 20 Sept. Weedkiller applied: 6 Oct. Fungicides applied: 4 May, 1984. Fungicides with insecticide applied: 27 June. Harvested by hand: 10 Aug. Previous crops: Oats 1982, potatoes 1983.

- NOTES: (1) Measurements were made of plant and shoot numbers, dry weight of tops and ears, leaf area and N contents during growth, photosynthetic rates, stomatal resistance and plant water potential.
 (2) Measurements of soil water, soil water potential and soil temperature were made.
 (3) Soil samples were taken at intervals for determinations of N content.
 (4) Straw for yield was cut at ground level.

GRAIN TONNES/HECTARE

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

IRRIGATN	NONE	FULL	MEAN
CULTIVTN			
WYE DIG	9.63	9.51	9.57
PLOUGH	8.68	9.48	9.08
MEAN	9.15	9.49	9.32
WINTER N	0	35+35	MEAN
CULTIVTN			
WYE DIG	9.64	9.50	9.57
PLOUGH	8.97	9.19	9.08
MEAN	9.31	9.34	9.32
WINTER N	0	35+35	MEAN
IRRIGATN			
NONE	9.20	9.11	9.15
FULL	9.41	9.57	9.49
MEAN	9.31	9.34	9.32
SPRING N	115	185	MEAN
CULTIVTN			
WYE DIG	9.34	9.80	9.57
PLOUGH	8.62	9.54	9.08
MEAN	8.98	9.67	9.32
SPRING N	115	185	MEAN
IRRIGATN			
NONE	8.74	9.56	9.15
FULL	9.21	9.77	9.49
MEAN	8.98	9.67	9.32

84/W/WW/3

GRAIN TONNES/HECTARE

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

SPRING N	115	185	MEAN	
WINTER N				
0	8.84	9.77	9.31	
35+35	9.12	9.56	9.34	
MEAN	8.98	9.67	9.32	
N TIME	EARLY	LATE	MEAN	
CULTIVTN				
WYE DIG	9.42	9.72	9.57	
PLOUGH	8.57	9.59	9.08	
MEAN	8.99	9.65	9.32	
N TIME	EARLY	LATE	MEAN	
IRRIGATN				
NONE	8.64	9.67	9.15	
FULL	9.35	9.64	9.49	
MEAN	8.99	9.65	9.32	
N TIME	EARLY	LATE	MEAN	
WINTER N				
0	8.94	9.67	9.31	
35+35	9.04	9.64	9.34	
MEAN	8.99	9.65	9.32	
N TIME	EARLY	LATE	MEAN	
SPRING N				
115	8.76	9.20	8.98	
185	9.23	10.11	9.67	
MEAN	8.99	9.65	9.32	
IRRIGATN	NONE		FULL	
WINTER N	0	35+35	0	35+35
CULTIVTN				
WYE DIG	9.60	9.66	9.69	9.33
PLOUGH	8.79	8.56	9.14	9.81
IRRIGATN	NONE		FULL	
SPRING N	115	185	115	185
CULTIVTN				
WYE DIG	9.13	10.13	9.55	9.47
PLOUGH	8.36	9.00	8.88	10.07
WINTER N	0		35+35	
SPRING N	115	185	115	185
CULTIVTN				
WYE DIG	9.20	10.09	9.48	9.51
PLOUGH	8.48	9.46	8.76	9.61

84/W/WW/3

GRAIN TONNES/HECTARE

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

WINTER N	0		35+35				
SPRING N	115	185	115	185			
IRRIGATN							
NONE	8.69	9.70	8.80	9.42			
FULL	8.99	9.84	9.44	9.71			
IRRIGATN	NONE		FULL				
N TIME	EARLY	LATE	EARLY	LATE			
CULTIVTN							
WYE DIG	9.50	9.76	9.34	9.68			
PLOUGH	7.77	9.58	9.36	9.59			
WINTER N	0		35+35				
N TIME	EARLY	LATE	EARLY	LATE			
CULTIVTN							
WYE DIG	9.55	9.74	9.29	9.70			
PLOUGH	8.34	9.60	8.80	9.58			
WINTER N	0		35+35				
N TIME	EARLY	LATE	EARLY	LATE			
IRRIGATN							
NONE	8.55	9.84	8.72	9.50			
FULL	9.34	9.49	9.37	9.78			
SPRING N	115		185				
N TIME	EARLY	LATE	EARLY	LATE			
CULTIVTN							
WYE DIG	9.47	9.21	9.37	10.23			
PLOUGH	8.05	9.18	9.08	9.99			
SPRING N	115		185				
N TIME	EARLY	LATE	EARLY	LATE			
IRRIGATN							
NONE	8.48	9.01	8.79	10.33			
FULL	9.04	9.39	9.66	9.89			
SPRING N	115		185				
N TIME	EARLY	LATE	EARLY	LATE			
WINTER N							
0	8.63	9.04	9.25	10.29			
35+35	8.89	9.35	9.20	9.93			
SPRNG NX	80	150	220	MEAN			
CULTIVNX							
WYE DIG	8.74	9.20	10.31	9.41			
PLOUGH	9.55	10.73	10.14	10.14			
MEAN	9.14	9.96	10.22	9.78			
EXTRA	WY NO I	PL NO I	RWY N5 I	RWY N5 O	RPL N5 I	RPL N5 O	MEAN
	2.99	7.69	10.54	*	12.11	*	8.33

84/W/WW/3

GRAIN TONNES/HECTARE

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

SED APPLY TO MAIN FACTORIAL PLOTS ONLY

MARGINS OF TWO FACTOR TABLES	0.236
TWO FACTOR TABLES	0.334
THREE FACTOR TABLES	0.472

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

STRATUM	DF	SE	CV%
WP	6	0.668	7.2

GRAIN MEAN DM% 83.3

84/W/WW/3

STRAW TONNES/HECTARE

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

IRRIGATN	NONE	FULL	MEAN
CULTIVTN			
WYE DIG	11.95	12.66	12.30
PLOUGH	9.63	10.44	10.03
MEAN	10.79	11.55	11.17
WINTER N	0	35+35	MEAN
CULTIVTN			
WYE DIG	11.68	12.92	12.30
PLOUGH	9.49	10.58	10.03
MEAN	10.59	11.75	11.17
WINTER N	0	35+35	MEAN
IRRIGATN			
NONE	10.50	11.09	10.79
FULL	10.68	12.42	11.55
MEAN	10.59	11.75	11.17
SPRING N	115	185	MEAN
CULTIVTN			
WYE DIG	11.59	13.02	12.30
PLOUGH	9.79	10.28	10.03
MEAN	10.69	11.65	11.17
SPRING N	115	185	MEAN
IRRIGATN			
NONE	10.63	10.95	10.79
FULL	10.74	12.35	11.55
MEAN	10.69	11.65	11.17
SPRING N	115	185	MEAN
WINTER N			
0	10.20	10.98	10.59
35+35	11.18	12.33	11.75
MEAN	10.69	11.65	11.17
N TIME	EARLY	LATE	MEAN
CULTIVTN			
WYE DIG	12.73	11.87	12.30
PLOUGH	9.81	10.26	10.03
MEAN	11.27	11.07	11.17

84/W/WW/3

STRAW TONNES/HECTARE

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

N TIME	EARLY	LATE	MEAN	
IRRIGATN				
NONE	10.17	11.41	10.79	
FULL	12.37	10.72	11.55	
MEAN	11.27	11.07	11.17	
N TIME	EARLY	LATE	MEAN	
WINTER N				
0	10.65	10.53	10.59	
35+35	11.89	11.61	11.75	
MEAN	11.27	11.07	11.17	
N TIME	EARLY	LATE	MEAN	
SPRING N				
115	10.82	10.55	10.69	
185	11.72	11.58	11.65	
MEAN	11.27	11.07	11.17	
IRRIGATN	NONE		FULL	
WINTER N	0	35+35	0	35+35
CULTIVTN				
WYE DIG	11.64	12.26	11.73	13.58
PLOUGH	9.35	9.92	9.62	11.25
IRRIGATN	NONE		FULL	
SPRING N	115	185	115	185
CULTIVTN				
WYE DIG	11.60	12.29	11.57	13.74
PLOUGH	9.66	9.61	9.91	10.96
WINTER N	0		35+35	
SPRING N	115	185	115	185
CULTIVTN				
WYE DIG	11.29	12.08	11.89	13.95
PLOUGH	9.10	9.87	10.47	10.70
WINTER N	0		35+35	
SPRING N	115	185	115	185
IRRIGATN				
NONE	10.14	10.85	11.12	11.05
FULL	10.25	11.10	11.23	13.60
IRRIGATN	NONE		FULL	
N TIME	EARLY	LATE	EARLY	LATE
CULTIVTN				
WYE DIG	11.84	12.05	13.62	11.70
PLOUGH	8.49	10.78	11.13	9.74

84/W/WW/3

STRAW TONNES/HECTARE

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

WINTER N	0		35+35	
N TIME	EARLY	LATE	EARLY	LATE
CULTIVTN				
WYE DIG	12.03	11.34	13.44	12.40
PLOUGH	9.27	9.71	10.35	10.81

WINTER N	0		35+35	
N TIME	EARLY	LATE	EARLY	LATE
IRRIGATN				
NONE	9.71	11.28	10.62	11.55
FULL	11.58	9.77	13.17	11.66

SPRING N	115		185	
N TIME	EARLY	LATE	EARLY	LATE
CULTIVTN				
WYE DIG	12.20	10.97	13.26	12.78
PLOUGH	9.43	10.14	10.18	10.38

SPRING N	115		185	
N TIME	EARLY	LATE	EARLY	LATE
IRRIGATN				
NONE	10.65	10.62	9.69	12.21
FULL	10.99	10.49	13.76	10.95

SPRING N	115		185	
N TIME	EARLY	LATE	EARLY	LATE
WINTER N				
0	10.50	9.89	10.79	11.16
35+35	11.13	11.22	12.66	12.00

SPRNG NX	80	150	220	MEAN
CULTIVNX				
WYE DIG	11.15	10.82	12.20	11.39
PLOUGH	12.87	13.34	12.11	12.77
MEAN	12.01	12.08	12.16	12.08

EXTRA	WY NO I	PL NO I	RWY N5 I	RWY N5 O	RPL N5 I	RPL N5 O	MEAN
	4.10	8.25	12.63	*	12.63	*	9.40

STRAW MEAN DM% 57.4

PLOT AREA HARVESTED 0.00392 (MEAN)

84/R/WW/4

WINTER WHEAT

WEEDKILLER RATES

Object: To study the effects of weedkillers applied at different rates by electrostatic or hydraulic sprayers - Stackyard.

Sponsors: G.R. Cayley, D.C. Griffiths, B.J. Pye, P. Etheridge, G.C. Scott, F.T. Phillips.

Design: 4 randomised blocks of 8 plots.

Whole plot dimensions: 3.0 x 30.0.

Treatments: All combinations of:-

1. SPRAYERS Spraying machine:

 HYDRAUL Conventional hydraulic sprayer
 ELECTRO Electrostatic sprayer

2. RATES Rates of isoproturon + mecoprop:

 STANDARD Standard rate mecoprop at 2.0 l, isoproturon at 2.43 l on
 15 Nov, 1983
 HALF Half above rate
 QUARTER Quarter above rate

plus one extra treatment:

 EXTRA

 NONE No weedkiller

NOTES: (1) The conventional hydraulic sprayer was tractor mounted and applied the weedkillers in 200 l.

(2) The electrostatic sprayer was also tractor mounted and had spinning cones charged at 30 kv and applied the weedkillers in 10 l.

Basal applications: Manures: 'Nitro-Chalk' at 750 kg. Fungicides: Prochloraz at 0.40 kg and carbendazim at 0.15 kg in 250 l. Maneb at 1.6 kg, carbendazim at 0.15 kg and tridemorph at 0.38 kg with captafol at 1.2 kg in 250 l. Insecticide: Pirimicarb at 0.14 kg in 200 l.

Seed: Avalon, sown at 170 kg.

Cultivations, etc.: - Ploughed: 31 Aug, 1983. Spring-tine cultivated twice, rotary harrowed, seed sown: 20 Sept. N applied: 9 Apr, 1984. Prochloraz and carbendazim applied: 25 Apr. Maneb, carbendazim, tridemorph and captafol applied: 12 June. Insecticide applied: 26 June. Combine harvested: 21 Aug. Previous crops: W. wheat 1982, w. beans 1983.

NOTE: Samples of volunteer beans, winter wheat crop, and weeds were taken immediately after spraying for analysis of weedkiller deposits. Weed counts were made in November 1983, and January, February and May 1984.

84/R/WW/4

GRAIN TONNES/HECTARE

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

	RATES SPRAYERS	STANDARD	HALF	QUARTER	MEAN
	HYDRAUL	12.19	11.45	11.18	11.61
	ELECTRO	11.77	11.14	10.80	11.24
	MEAN	11.98	11.30	10.99	11.42
NONE		9.48			
GRAND MEAN		11.15			

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

TABLE	SPRAYERS	RATES	SPRAYERS RATES & NONE
SED	0.185	0.227	0.321

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.453	4.1
GRAIN MEAN DM%	87.5		
PLOT AREA HARVESTED	0.00828		

84/R/WW/5

WINTER WHEAT

CONTROL OF SLUGS

Object: To test seed treatments for the control of slugs in winter wheat - Pastures.

Sponsor: G.C. Scott.

Design: 4 randomised blocks of 9 plots.

Whole plot dimensions: 6.0 x 8.0.

TREATMNT	Treatments to control slugs:
NONE	None
MET 2 SD	Methiocarb seed treatment, 0.2% ai/wt of seed
CAR 1 SD	Cartap seed treatment, 0.1% ai/wt of seed
CAR 2 SD	Cartap seed treatment, 0.2% ai/wt of seed
CAR2+MP	Cartap seed treatment, 0.2% ai/wt of seed + methiocarb pellets drilled with seed
JAP 1 SD	'JAP 1' seed treatment
JAP 2 SD	'JAP 2' seed treatment
MET PDR	Methiocarb pellets drilled with seed
MET PBC	Methiocarb pellets broadcast on 7 Oct, 1983, pre-drilling

Basal applications: Manures: 'Nitro-Chalk' at 750 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Chlortoluron at 3.5 kg in 250 l. Mecoprop (as 'CMPP' at 4.2 l) in 250 l. Fungicides: Maneb at 1.6 kg and zineb at 0.17 kg in 250 l with prochloraz at 0.4 kg. Insecticide: Pirimicarb at 0.14 kg in 500 l.

Seed: Norman, sown at 200 kg.

Cultivations, etc.:- Glyphosate applied: 1 Sept, 1983. Heavy spring-tine cultivated twice: 27 Sept. Disced twice: 30 Sept. Rotary harrowed, seed sown: 19 Oct. Chlortoluron applied: 21 Oct. N applied: 9 Apr, 1984. Mecoprop applied: 18 Apr. Fungicides applied: 19 June. Insecticide applied: 28 June. Combine harvested: 22 Aug. Previous crops: Grass/clover ley 1982 and 1983.

NOTE: Slug counts were made before and after drilling. Samples were taken in November for assessment of slug damage to seeds.

84/R/WW/5

GRAIN TONNES/HECTARE

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

TREATMNT	
NONE	12.50
MET 2 SD	13.62
CAR 1 SD	12.24
CAR 2 SD	12.53
CAR2+MP	12.62
JAP 1 SD	12.76
JAP 2 SD	12.61
MET PDR	12.26
MET PBC	12.75
MEAN	12.65

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

TABLE	TREATMNT
-----	-----
SED	0.624

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

STRATUM	DF	SE	CV%
BLOCK.WP	24	0.883	7.0
GRAIN MEAN DM%	86.4		
PLOT AREA HARVESTED	0.00228		

84/R/WW/6

WINTER WHEAT

SEED DRESSINGS AND TAKE-ALL

Object: To study the effects of seed treatments on the incidence of take-all and on the yield of early-sown winter wheat - Gt. Knott I.

Sponsor: G.L. Bateman.

Design: 4 randomised blocks of 6 plots.

Whole plot dimensions: 3.0 x 12.0.

Treatments: All combinations of:-

1. SOWDATE Dates of sowing:
 8 SEPT 8 September, 1983
 7 OCT 7 October
2. SEED DR Seed dressings:
 NONE None
 TRIADIME Triadimenol at 0.5 g/kg of seed plus fuberidazole at
 0.06 g/kg of seed
 UKO 82F 'UKO 82 f' at 2.75 ml/kg of seed

Basal applications: Manures: Muriate of potash at 420 kg. 'Nitro-Chalk' on three occasions, at 130 kg on the first, at 150 kg on the second and at 460 kg on the third. Weedkillers: Isoproturon at 2.5 kg with bromoxynil and ioxynil (as 'Deloxil' at 2.0 l) in 250 l. Dicamba with mecoprop and MCPA (as 'Herrisol' at 5.0 l) in 250 l applied with the prochloraz and carbendazim. Fungicides: Prochloraz at 0.4 kg with carbendazim at 0.15 kg. Maneb at 1.6 kg with tridemorph at 0.38 kg and carbendazim at 0.15 kg in 250 l. Insecticide: Pirimicarb at 0.14 kg in 250 l.

Seed: Aquila, sown at 170 kg.

Cultivations, etc.:- Heavy spring-tine cultivated: 3 Sept, 1983. Muriate of potash and first N applied: 7 Sept. All plots heavy spring-tine cultivated twice, early-sown plots rotary harrowed and seed sown: 8 Sept. Late-sown plots rotary harrowed and seed sown: 7 Oct. Isoproturon with 'Deloxil' applied: 1 Dec. Second N applied: 16 Feb, 1984. Third N applied: 11 Apr. 'Herrisol' with prochloraz and carbendazim applied: 17 Apr. Maneb, carbendazim and tridemorph applied: 13 June. Insecticide applied: 27 June. Combine harvested: 22 Aug. Previous crops: W. wheat 1982 and 1983.

NOTE: Take-all and mildew assessments were made twice during the autumn. Take-all and foot rots were assessed in March, May and June.

84/R/WW/6

GRAIN TONNES/HECTARE

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

SEED DR SOWDATE	NONE	TRIADIME	UKO 82F	MEAN
8 SEPT	5.72	8.44	6.93	7.03
7 OCT	7.43	7.75	7.89	7.69
MEAN	6.57	8.09	7.41	7.36

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

TABLE	SOWDATE	SEED DR	SOWDATE SEED DR
SED	0.378	0.463	0.655

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

STRATUM	DF	SE	CV%
BLOCK.WP	15	0.926	12.6

GRAIN MEAN DM% 86.2

PLOT AREA HARVESTED 0.00329

84/R/WW/7

WINTER WHEAT

APHID CONTROL BY ERYNIA

Object: To study the effect on caged and uncaged aphid populations of applying two amounts of the aphid pathogenic fungus *Erynia neoaphidis* on the incidence of aphids and on the yield of w. wheat - Long Hoos V 4.

Sponsor: N. Wilding.

Design: 3 randomised blocks of 6 plots.

Whole plot dimensions: 2.14 x 2.0.

Treatments: All combinations of:-

1. COVER Covering on plots:
 - NONE None
 - CAGED Mesh-sided cages covering plots from 18 May, 1984 to 29 June.

2. INOCULUM Rate of inoculum:
 - NONE None
 - E NEO 1 E. neoaphidis applied as a powder of mummified aphids at 0.5 kg on 17 June and 4 July
 - E NEO 2 E. neoaphidis applied as a powder of mummified aphids at 5.0 kg on 17 June and 4 July

Note: *Sitobion avenae* and *Metopolophium dirhodum* were released on all plots, during a ten-day period from the end of May.

Basal applications: Manures: Chalk at 2.9 t. 'Nitro-Chalk' at 450 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 220 l applied with the fungicide. Fungicide: Triadimefon at 0.12 kg in 220 l on two occasions, the first with the 'Brittox'. Insecticide: Pyrethrum dust (as 'Anti-ant' at 116 kg).

Seed: Maris Huntsman, sown at 190 kg.

Cultivations, etc.: - Glyphosate applied: 18 Aug, 1983. Chalk applied: 23 Aug. Ploughed: 31 Aug. Spring-tine cultivated, seed sown: 5 Oct. 'Brittox' with the fungicide applied, N applied: 10 Apr, 1984. Fungicide alone applied: 4 May. Pyrethrum applied: 21 May. Combine harvested: 22 Aug. Previous crops: Fallow 1982, w. rape 1983.

NOTE: Samples of live aphids were taken weekly from mid June until late July to determine proportions infected with *Erynia*, and the total population was estimated weekly.

84/R/WW/7

GRAIN TONNES/HECTARE

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

INOCULUM COVER	NONE	E NEO 1	E NEO 2	MEAN
NONE	7.00	6.88	7.07	6.98
CAGED	4.04	3.61	3.79	3.82
MEAN	5.52	5.24	5.43	5.40

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

TABLE	INOCULUM	COVER	INOCULUM COVER
-----	-----	-----	-----
SED	0.232	0.190	0.328

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

STRATUM	DF	SE	CV%
BLOCK.WP	10	0.402	7.5

GRAIN MEAN DM% 86.9

PLOT AREA HARVESTED 0.00010

84/R/WW/12

WINTER WHEAT

PERSISTENCE OF APHICIDES

Object: To examine the persistence of aphicides applied at two growth stages and their effect on the yield of winter wheat - Bones Close.

Sponsors: N. Carter.

Design: 4 randomised blocks of 12 plots.

Whole plot dimensions: 3.0 x 13.0.

Treatments: All combinations of:-

1. APHICIDE Aphicides:

DELTAMET	Deltamethrin at 0.012 kg
DEMETON	Demeton-S-methyl at 0.24 kg
PIRIM ST	Pirimicarb (standard formulation) at 0.14 kg
PIRIM NF	Pirimicarb (new formulation) at 0.14 kg
PIRIM EN	Pirimicarb (encapsulated) at 0.14 kg

2. APH TIME Timing of aphicides:

GS 45	Booting, growth stage 45 on 4 June, 1984, repeated on 12 June
GS 65	Flowering, growth stage 65 on 25 June

Plus one extra treatment:

EXTRA	
NONE	No aphicide (duplicated)

NOTE: Aphicide treatments were applied in 220 l on 4 June and in 200 l on 12 June and 25 June.

Basal applications:

Manures: (5:14:30) at 340 kg. 'Nitro-Chalk' at 560 kg. Weedkillers: Isoproturon at 2.5 kg with mecoprop (as 'CMPP' at 3.6 l) in 250 l. Fungicides: Propiconazole on two occasions, at 0.25 kg in 250 l on the first occasion, at 0.12 kg in 200 l on the second.

Seed: Stetson, sown at 170 kg.

Cultivations, etc.:-

Ploughed: 23 Aug, 1983. Spring-tine cultivated: 20 Sept. NPK applied: 28 Sept. Rotary harrowed, seed sown: 17 Oct. Weedkillers applied: 1 Dec. N applied: 10 Apr, 1984. Fungicide applied: 4 June, 29 June. Combine harvested: 20 Aug. Previous crops: W. barley 1982, w. rape 1983.

NOTE: Aphicide persistence was bioassayed, using *Sitobion avenae*, on the day after spraying and at weekly intervals for three weeks thereafter. Naturally occurring aphids were counted during this period.

84/R/WW/12

GRAIN TONNES/HECTARE

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

APHICIDE APH TIME	DELTAMET	DEMETON	PIRIM ST	PIRIM NF	PIRIM EN	MEAN
GS 45	11.41	11.57	10.85	11.32	11.47	11.32
GS 65	11.35	11.33	11.39	11.48	11.51	11.41
MEAN	11.38	11.45	11.12	11.40	11.49	11.37
NONE	10.89					
GRAND MEAN	11.29					

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

TABLE	APH TIME	APHICIDE	APH TIME APHICIDE
SED	0.082	0.130	0.184

SED FOR COMPARING EXTRA NONE WITH ANY ITEM IN APHICIDE. APH TIME TABLE IS 0.159

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.260	2.3

GRAIN MEAN DM% 87.8

PLOT AREA HARVESTED 0.00359

84/R/WW/13

WINTER WHEAT

ELECTROSTATIC APPLICATION OF POST-EMERGENCE WEEDKILLER

Object: To study the effects of post-emergence weedkiller applied by charged rotary atomisers on weed survival and on the yield of winter wheat - Claycroft.

Sponsor: G.R. Cayley, P. Etheridge, D.C. Griffiths, B.J. Pye, G.C. Scott.

Design: 4 randomised blocks of 7 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. SPRAYER Spraying machines:

HYDRAUL	Conventional hydraulic sprayer in 200 l
ELECT J	'Jumbo' electrostatic in 8 l
ELECT M	'Micronex' electrostatic in 9.3 l
2. ISOPRATE Rates of isoproturon applied 1 Mar, 1984:

1.05	Half standard rate
2.10	Standard rate

plus one extra treatment:

EXTRA

NONE No weedkiller

NOTE: The 'Jumbo' electrostatic sprayer has electrostatically charged spinning cone nozzles, the 'Micronex' is a commercial prototype with electrostatically charged spinning disc nozzles.

Basal applications: Manures: 'Nitro-Chalk' on two occasions, at 130 kg on the first and at 750 kg on the second. Weedkiller: Paraquat at 0.42 kg ion in 250 l. Fungicides: Prochloraz at 0.40 kg and carbendazim at 0.15 kg in 250 l. Maneb at 1.6 kg and zineb at 0.17 kg with prochloraz at 0.4 kg in 500 l. Insecticide: Pirimicarb at 0.14 kg in 200 l.

Seed: Avalon, sown at 170 kg.

Cultivations, etc.:- Heavy spring-tine cultivated: 12 Sept, 1983. Weedkiller applied: 20 Sept. First N applied: 26 Sept. Heavy spring-tine cultivated, rotary harrowed, seed sown: 27 Sept. Second N applied: 9 Apr, 1984. Prochloraz and carbendazim applied: 25 Apr. Maneb, zineb and prochloraz applied: 14 June. Insecticide applied: 27 June. Combine harvested: 22 Aug. Previous crops: S. beans 1982, s. wheat 1983.

NOTE: Crop and weed samples were taken immediately after spraying to assess weedkiller deposits. Weeds were assessed in April.

84/R/WW/13

GRAIN TONNES/HECTARE

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

	SPRAYER	HYDRAUL	ELECT J	ELECT M	MEAN
ISOPRATE					
	1.05	10.15	9.54	8.78	9.49
	2.10	10.75	10.26	10.58	10.53
MEAN		10.45	9.90	9.68	10.01
NONE	8.51				
GRAND MEAN		9.79			

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

TABLE	ISOPRATE	SPRAYER	ISOPRATE SPRAYER
-----	-----	-----	-----
SED	0.209	0.256	0.362

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.512	5.2

GRAIN MEAN DM% 86.6

PLOT AREA HARVESTED 0.00234

84/R/WW/15

WINTER WHEAT

CHLORIDE AND TAKE-ALL

Object: To study the effects of different spring nitrogen top dressings, that include chloride and ammonium ions, on the incidence of take-all and on the yield of winter wheat - Gt. Knott I.

Sponsors: R.J. Gutteridge, G.L. Bateman.

Design: 4 randomised blocks of 4 plots.

Whole plot dimensions: 3.0 x 12.0.

Treatments:

SPRING N Spring nitrogen, 40 kg N on 9 March, 1984; 160 kg N on 16 April:

AMM CHL	Ammonium chloride
AMM NIT	Ammonium nitrate as 'Nitro-Chalk'
AMM SUL	Ammonium sulphate
UREA	Urea

Basal applications: Manures: Muriate of potash at 410 kg. 'Nitro-Chalk' at 130 kg. Weedkillers: Isoproturon at 2.5 kg with bromoxynil and ioxynil (as 'Deloxil' at 1.0 l) in 250 l. Dicamba, mecoprop and MCPA (as 'Herrisol' at 5.0 l) in 250 l applied with the prochloraz and carbendazim. Fungicides: Prochloraz at 0.40 kg and carbendazim at 0.15 kg. Maneb at 1.6 kg with carbendazim at 0.15 kg and tridemorph at 0.38 kg in 250 l. Insecticide: Pirimicarb at 0.14 kg in 250 l.

Seed: Longbow, sown at 170 kg.

Cultivations, etc.: - Discd: 3 Sept, 1983. Basal N and K applied: 7 Sept. Rotary harrowed, seed sown: 11 Oct. Isoproturon with 'Deloxil' applied: 30 Nov. 'Herrisol' with prochloraz and carbendazim applied: 17 Apr, 1984. Maneb with carbendazim and tridemorph applied: 13 June. Insecticide applied: 27 June. Combine harvested: 22 Aug. Previous crops: W. wheat 1982 and 1983.

NOTE: Take-all assessments were made monthly from early March to late June and foot rot assessments were made in June.

84/R/WW/15

GRAIN TONNES/HECTARE

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

SPRING N	AMM CHL	AMM NIT	AMM SUL	UREA	MEAN
	7.92	8.59	8.25	8.33	8.27

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

TABLE	TREATMNT
-----	-----
SED	0.453

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

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.641	7.8

GRAIN MEAN DM% 88.0

PLOT AREA HARVESTED 0.00280