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# Yields of the Field Experiments 1984

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## 84/R/WW/3 Factors Limiting Yield - W. Wheat

### Rothamsted Research

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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

84/R/WW/3

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. PESTICIDE 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

84/R/WW/3

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



84/R/WW/3

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

84/R/WW/3

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

84/R/WW/3

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



84/R/WW/3

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

84/R/WW/3

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

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

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

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

AUT NI N TIMEI	NONE	AUT N	MEAN
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