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Winter Wheat

Rothamsted Research

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75/R/WW/1 and 75/W/WW/1

WINTER WHEAT

VARIETIES, N, CCC AND FUNGICIDE

Object: To study the yields and flour quality of a selection of the newer varieties of winter wheat and the effects of nitrogen, chlormequat and fungicides on land in rotation (pathogen free) and after several cereals (pathogen infected) - Rothamsted (R) Pastures (pathogen free) and Great Harpenden I (pathogen infected) and Woburn (W) Lansome III (pathogen free).

Sponsor: R. Moffitt, J.F. Jenkyn, D.B. Slope.

Design: 4 randomised blocks of 8 plots split into 4 with confounding.

Whole plot dimensions: 4.27 x 27.1.

Treatments: All combinations of:-

Whole plots: 1. Varieties:

	VARIETY
Atou	AT
Bouquet	BO
Cappelle	CA
Flinor	FL
Maris Freeman	FR
Maris Fundin	FU
Maris Huntsman	HU
Maris Templar	TE

Sub plots: 2. Nitrogen fertiliser (kg N):

Pastures (RH)	Gt. Harpenden I (RD) and Lansome III (WH)	(RH)	(RD & WH)
None	63 in spring	0	63
63 in spring	126 in spring	63	126
126 in spring	189 in spring	126	189
63 in spring + 63 at flowering	126 in spring + 63 at flowering	63+63	126+63

3. Chlormequat (kg):

None	0.0
1.7	1.7

4. Fungicide in early May:

None	NONE
Carbendazim	CARBENDA

5. Fungicides at flowering:

None	NONE
Carbendazim + tridemorphe	CARB/TRI

NOTE: Treatment 4 was not applied on Lansome III (W).

75/R/WW/1 and 75/W/WW/1

Basal applications:

Manures:

Pastures (RH), and Great Harpenden I (RD): (0:20:20) at 310 kg, combine drilled.

Lansome III (WH): (0:20:20) at 290 kg, combine drilled.

Weedkillers:

Pastures (RH): Mecoprop at 1.7 kg plus bromoxynil at 0.14 kg with ioxynil at 0.21 kg and dichlorprop at 0.42 kg in 220 l.

Great Harpenden I (RD): MCPA, mecoprop and dicamba ('Banlene Plus' at 5.6 kg in 220 l).

Lansome III (WH): Ioxynil at 0.63 kg with mecoprop at 1.9 kg in 280 l.

Seed: Sown at 200 kg.

Cultivations, etc.:-

Great Harpenden I (RD): Ploughed: 22 Oct, 1974. Rotary harrowed: 5 Dec. Seed sown: 6 Dec. N applied: 18 Apr, 1975. Weedkiller applied: 12 May. Fungicide applied: 15 May. Chlormequat applied: 20 May. Late N, and fungicides applied: 18 June. Combine harvested: 19 Aug. Previous crops: Barley 1973, winter wheat 1974.

Pastures (RH): Chisel ploughed twice: 9-10 Dec, 1974. Rotary cultivated, seed sown: 20 Dec. N applied: 18 Apr, 1975. Weedkiller applied: 9 May. Fungicide applied: 15 May. Chlormequat applied: 20 May. Late N, and fungicides applied: 18 June. Combine harvested: 15 Aug. Previous crops: Beans 1973, potatoes 1974.

Lansome III (WH): Deep-tine cultivated twice: 31 Oct, 6 Nov, 1974. Spring-tine cultivated twice: 8 Nov, 25 Nov. Seed sown: 26 Nov. N applied: 11 Apr, 1975. Weedkiller applied: 9 May. Chlormequat applied: 22 May. Late N applied: 23 June. Fungicides applied: 1 July. Combine harvested: 15 Aug. Previous crops: Beans 1973, potatoes 1974.

- NOTES: (1) Pastures (RH): Samples were taken for assessments of foliar diseases.
(2) Great Harpenden I (RD): Samples were taken for estimates of eyespot (*Cercospora herpotrichoides*) and take-all (*Gaeumannomyces graminis*).
(3) Grain samples were taken from all sites at harvest for assessments of flour quality.

75/R/WW/1 PASTURES (RH) PATHOGEN FREE

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

VARIETY N	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
0	5.57	5.36	5.03	4.94	6.15	4.90	5.76	5.32	5.38
63	7.42	7.38	7.16	6.84	7.27	7.01	7.68	7.74	7.31
126	8.01	7.88	7.58	7.69	8.01	7.77	8.10	8.11	7.89
63+63	8.34	8.14	7.95	7.62	7.73	8.22	7.89	8.36	8.03
MEAN	7.33	7.19	6.93	6.78	7.29	6.97	7.36	7.38	7.15

VARIETY CCC	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
0.0	7.09	7.08	6.79	6.46	7.51	6.86	7.23	7.54	7.07
1.7	7.58	7.30	7.07	7.10	7.08	7.09	7.48	7.22	7.24
MEAN	7.33	7.19	6.93	6.78	7.29	6.97	7.36	7.38	7.15

VARIETY FUNGICIDE(1)	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
NONE	7.39	7.04	7.03	6.50	7.30	6.87	7.45	7.37	7.12
CARBENDA	7.28	7.34	6.82	7.05	7.29	7.07	7.27	7.39	7.19
MEAN	7.33	7.19	6.93	6.78	7.29	6.97	7.36	7.38	7.15

VARIETY FUNGICIDE(2)	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
NONE	7.33	7.16	6.86	6.66	6.85	6.97	7.39	7.17	7.05
CARB/TRI	7.34	7.22	6.99	6.89	7.73	6.98	7.33	7.59	7.26
MEAN	7.33	7.19	6.93	6.78	7.29	6.97	7.36	7.38	7.15

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

TABLE	N	CCC	FUNGICIDE(1)	FUNGICIDE(2)
SED	0.148	0.105	0.105	0.105

TABLE	VARIETY	N	VARIETY
SED	0.168	0.400	
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY		0.419	

TABLE	CCC	FUNGICIDE(1)	FUNGICIDE(2)
	VARIETY	VARIETY	VARIETY
SED	0.268	0.268	0.268
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY	0.297	0.297	0.297

75/R/WW/1 GT HARPENDEN I (RD) PATHOGEN INFECTED

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

VARIETY	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
N									
63	5.01	5.30	4.39	3.83	4.76	3.92	4.63	4.99	4.60
126	6.36	6.07	5.77	5.35	5.83	6.20	6.01	6.59	6.02
189	5.72	5.70	5.50	6.12	5.67	6.02	6.40	6.50	5.95
126+63	6.28	5.94	5.78	6.19	6.62	5.53	6.25	6.94	6.19
MEAN	5.84	5.75	5.36	5.37	5.72	5.42	5.82	6.26	5.69

VARIETY	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
CCC									
0.0	6.22	5.71	5.27	5.42	5.87	5.63	5.79	6.20	5.76
1.7	5.46	5.80	5.45	5.33	5.57	5.21	5.85	6.32	5.62
MEAN	5.84	5.75	5.36	5.37	5.72	5.42	5.82	6.26	5.69

VARIETY	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
FUNGCIDE(1)									
NONE	5.79	5.70	5.45	5.36	5.95	5.13	5.89	6.13	5.67
CARBENDA	5.89	5.81	5.27	5.39	5.49	5.70	5.75	6.38	5.71
MEAN	5.84	5.75	5.36	5.37	5.72	5.42	5.82	6.26	5.69

VARIETY	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
FUNGCIDE(2)									
NONE	5.64	5.88	5.23	5.41	5.67	5.48	5.88	6.24	5.68
CARB/TRI	6.04	5.63	5.49	5.34	5.77	5.35	5.76	6.28	5.71
MEAN	5.84	5.75	5.36	5.37	5.72	5.42	5.82	6.26	5.69

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

TABLE	N	CCC	FUNGCIDE(1)	FUNGCIDE(2)
SED	0.140	0.099	0.099	0.099

TABLE	VARIETY	N	VARIETY
SED	0.217	0.406	
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY		0.396	

TABLE	CCC	FUNGCIDE(1)	FUNGCIDE(2)
	VARIETY	VARIETY	VARIETY
SED	0.294	0.294	0.294
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:			
VARIETY	0.280	0.280	0.280

75/W/W/1 LANSOME III (W) PATHOGEN FREE

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

VARIETY N	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
63	3.37	3.71	3.60	3.26	3.69	2.66	3.34	3.95	3.45
126	3.82	4.42	4.06	4.33	4.68	3.19	4.11	4.33	4.12
189	4.16	4.19	4.01	4.59	3.86	3.25	3.86	4.33	4.03
126+63	4.14	4.34	4.11	4.44	4.06	2.78	4.05	4.56	4.06
MEAN	3.87	4.17	3.95	4.16	4.07	2.97	3.84	4.29	3.91

VARIETY CCC	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
0.0	3.90	4.08	3.96	4.21	4.16	3.22	3.68	4.44	3.96
0.7	3.84	4.26	3.93	4.10	3.99	2.71	4.00	4.15	3.87
MEAN	3.87	4.17	3.95	4.16	4.07	2.97	3.84	4.29	3.91

VARIETY FUNGICIDE(2)	AT	BO	CA	FL	FR	FU	HU	TE	MEAN
NONE	4.05	4.13	3.75	3.94	4.04	2.98	3.86	4.03	3.85
CARB/TRI	3.69	4.20	4.14	4.37	4.11	2.96	3.82	4.56	3.98
MEAN	3.87	4.17	3.95	4.16	4.07	2.97	3.84	4.29	3.91

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

TABLE	N	CCC FUNGCIDE(2)	VARIETY
SED	0.100	0.071	0.071

TABLE	N VARIETY	CCC VARIETY	FUNGCIDE(2) VARIETY
SED	0.414	0.362	0.362

EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:
 VARIETY 0.283 CCC 0.200 FUNGCIDE(2) 0.200

75/R/WW/1 PASTURES (RH) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

STRATUM	DF	SE	CV%
BLOCK.WP	17	0.237	3.3
BLOCK.WP.SP	40	0.593	8.3

GRAIN MEAN DM% 86.0

SUB PLOT AREA HARVESTED 0.00173

75/R/WW/1 GT HARPENDEN I (RD) PATHOGEN INFECTED

GRAIN TONNES/HECTARE

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

STRATUM	DF	SE	CV%
BLOCK.WP	17	0.306	5.4
BLOCK.WP.SP	40	0.561	9.8

GRAIN MEAN DM% 88.4

SUB PLOT AREA HARVESTED 0.00001

75/W/WW/1 LANSOME III (W) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	0.472	12.1
BLOCK.WP.SP	14	0.401	10.2

GRAIN MEAN DM% 86.1

SUB PLOT AREA HARVESTED 0.00173

75/R/WW/2

WINTER WHEAT

FOLIAR DISEASES

Object: To study the effects of different amounts of infected straw, seed infection and seed dressing on incidence of Septoria and yield of winter wheat - Pastures.

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

Design: 2 randomised blocks of 12 plots.

Whole plot dimensions: 4.27 x 9.14.

Treatments: All combinations of:-

- | | |
|--|-----------|
| 1. Rate of applying straw, infected with Septoria, to seedbed: | STRAW RT |
| None | NONE |
| Little (66 kg/ha) | LITTLE |
| Much (584 kg/ha) | MUCH |
| 2. Seed infection with Septoria: | SEED INF |
| None | NONE |
| Infected | INFECTED |
| 3. Seed dressing: | SEED DRS |
| None | NONE |
| Fungicide (Mercury as, 'Agrosan GN', at 2.2 g/kg of seed) | FUNGICIDE |

Basal applications: Manures: (0:20:20) at 250 kg combine drilled. 'Nitro-Chalk' at 240 kg. Weedkillers: Mecoprop ('Compitox Extra' at 2.8 l) plus bromoxynil with ioxynil ('Oxytril CM' at 1.4 l) in 220 l. Growth regulator: Chlormequat ('Cycocel' at 4.2 l in 340 l). Irrigation: 5 mm applied on each of 7 occasions.

Seed: Cappelle, sown at 200 kg.

Cultivations, etc.: - Chisel ploughed twice: 9 Dec, 1974. Spring-tine cultivated, straw applied and all plots rotary cultivated: 10 Dec. Seed sown and cultivated in: 18 Dec. N applied: 5 Apr, 1975. Weedkiller applied: 9 May. Growth regulator applied: 20 May. Water applied: 25, 26 and 28 June, 5, 12, 19 and 26 July. Combine harvested: 13 Aug. Previous crops: Beans 1973, potatoes 1974.

NOTE: Septoria was assessed on the seedlings and again on 16 and 28 July.

75/R/WW/2

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

SEED INF	NONE	INFECTED	MEAN
STRAW RT			
NONE	7.12	6.85	6.98
LITTLE	6.69	6.95	6.82
MUCH	6.32	6.71	6.51
MEAN	6.71	6.83	6.77

SEED DRS	NONE	FUNGCIDE	MEAN
STRAW RT			
NONE	6.48	7.49	6.98
LITTLE	6.63	7.01	6.82
MUCH	6.16	6.86	6.51
MEAN	6.43	7.12	6.77

SEED DRS	NONE	FUNGCIDE	MEAN
SEED INF			
NONE	6.38	7.05	6.71
INFECTED	6.47	7.20	6.83
MEAN	6.43	7.12	6.77

SEED INF	NONE	INFECTED	
SEED DRS	NONE FUNGCIDE	NONE FUNGCIDE	
STRAW RT			
NONE	6.72	7.52	6.25 7.45
LITTLE	6.58	6.80	6.68 7.22
MUCH	5.83	6.82	6.50 6.91

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

TABLE	STRAW RT	SEED INF	SEED DRS	STRAW RT SEED INF
SED	0.165	0.134	0.134	0.233

TABLE	STRAW RT SEED DRS	SEED INF SEED DRS	STRAW RT SEED INF SEED DRS
SED	0.233	0.190	0.329

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

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.329	4.9

GRAIN MEAN DM% 86.4

PLOT AREA HARVESTED 0.00260

75/R/WW/3

WINTER WHEAT

SEED DRESSINGS AND SEPTORIA

Object: To study the importance and efficiency of organo-mercury and non-mercury seed dressings against certain pathogens, particularly Septoria seedling blight. Also to study the importance of seedling infections in the epidemiology of the disease - Pastures.

Sponsor: G.L. Bateman.

Design: 2 blocks of 15 plots.

Whole plot dimensions: 2.41 x 11.6.

Treatments: Seed dressings, to seed infected with Septoria (per kg seed):

	SEEDRESS
None (3 plots per block)	0
Phenyl mercury acetate at 1 mg Hg) (2 plots	PMA 1
Phenyl mercury acetate at 5 mg Hg) each per	PMA 5
Phenyl mercury acetate at 25 mg Hg) block)	PMA 25
Carboxin at 4.5 g (a.i.)	CARBOXIN
Guazatine at 0.8 g (a.i.)	GUAZATIN
Guazatine at 0.6 g + maneb at 0.6 g (a.i.)	GUAZ/MAN
Maneb at 3.2 g (a.i.)	MANEB
Quinacetol sulphate at 0.27 g + maneb at 0.45 g (a.i.)	QUIN/MAN
Thiabendazole at 2.4 g (a.i.)	THIABEND

Basal applications: Manures: 'Nitro-Chalk' at 380 kg.

Seed: Chalk, sown at 200 kg.

Cultivations, etc.: - Chisel ploughed twice: 9 Dec, 1974. Rotary harrowed: 19 Dec. Seed sown: 20 Dec. N applied: 21 Apr, 1975. Combine harvested: 18 Aug. Previous crops: Beans 1973, potatoes 1974.

NOTE: Counts were made of seedling emergence. Assessments were made of seedlings infected by Septoria, and on one occasion of leaf infection by Septoria, mildew and eyespot.

75/R./WW/3

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

SEEDRESS	
0	7.27
PMA 1	7.40
PMA 5	7.25
PMA 25	7.08
CARBOXIN	7.16
GUAZATIN	7.01
GUAZ/MAN	7.11
MANEB	7.08
QUIN/MAN	7.30
THIABEND	7.36
MEAN	7.22

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

TABLE	SEEDRESS
SED	0.175 (1)
	0.222 (2)
	0.192 (3)
	0.235 (4)
	0.272 (5)

- (1) 0 V ANY OF PMA
- (2) 0 V ANY OF REMAINDER (EXCLUDING 0 AND PMA)
- (3) PMA
- (4) PMA V ANY OF REMAINDER
- (5) ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	19	0.272	3.8

GRAIN MEAN DM% 85.0

PLOT AREA HARVESTED 0.00126

75/R/WW/4

WINTER AND SPRING WHEAT

SOWING DATES AND INSECTICIDES

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

Sponsor: R.T. Plumb.

Design: 4 randomised blocks of 12 plots.

Whole plot dimensions: 6.40 x 24.4.

Treatments: All combinations of:-

1. Dates of sowing:	SOW DATE
8 November 1974	8 NOV
5 December 1974	5 DEC
27 February 1975	27 FEB
2. Phorate granules to seedbed:	INSECTICIDE(1)
None	NONE
Phorate at 5 kg	PHORATE
3. Menazon spray:	INSECTICIDE(2)
None	NONE
Menazon (0.7 l 'Saphi-Col' in 450 l on 13 June 1975)	MENAZON

NOTE: It was intended to sow winter wheat in September, October and November, but because of poor weather, only two autumn sowings were possible and the third series of plots were sown with spring wheat on 27 February.

Seed: Winter wheat: Cappelle, sown at 200 kg.
Spring wheat: Kleiber, sown at 200 kg.

Basal applications: Manures: (10:24:24) at 250 kg, 'Nitro-Chalk' at 500 kg.

Cultivations, etc.:- Ploughed: 25 Sept to 9 Oct, 1974. Spring-tine cultivated twice: 7 Nov. Phorate applied, plots rotary cultivated, seed sown: 8 Nov. Phorate applied and plots power harrowed, seed sown: 5 Dec. Phorate applied, plots power harrowed, seed sown: 27 Feb, 1975. N applied to all plots: 20 Apr. Combine harvested: November and December sowing: 14 Aug, February sowing: 28 Aug. Previous crops: Barley 1973, Oats 1974.

NOTE: Aphid counts were made on 24 Apr, 22 May, 11 June, 4, 10 and 21 July, virus counts on 26 June and 4 July. Ear weights and grain numbers prior to harvest and 1,000 grain weights were determined.

75/R/WW/4

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

INSC TCDE(1) SOW DATE	NONE	PHORATE	MEAN
8 NOV	5.90	5.99	5.94
5 DEC	5.59	5.74	5.66
27 FEB	3.73	4.27	4.02
MEAN	5.09	5.33	5.21

INSC TCDE(2) SOW DATE	NONE	MENAZON	MEAN
8 NOV	5.98	5.91	5.94
5 DEC	5.60	5.73	5.66
27 FEB	4.01	4.03	4.02
MEAN	5.20	5.22	5.21

INSC TCDE(2) INSC TCDE(1)	NONE	MENAZON	MEAN
NONE	5.01	5.17	5.09
PHORATE	5.39	5.28	5.33
MEAN	5.20	5.22	5.21

INSC TCDE(1) INSC TCDE(2) SOW DATE	NONE	MENAZON	PHORATE NONE	MENAZON
8 NOV	5.94	5.86	6.02	5.96
5 DEC	5.47	5.72	5.74	5.74
27 FEB	3.61	3.94	4.41	4.13

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

TABLE	SOW DATE INSC TCDE(1)	INSC TCDE(1)	INSC TCDE(2)	SOW DATE INSC TCDE(1)
SED	0.145	0.113	0.118	0.205

TABLE	SOW DATE INSC TCDE(2)	INSC TCDE(1) INSC TCDE(2)	SOW DATE INSC TCDE(1) INSC TCDE(2)
SED	0.205	0.167	0.290

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

STRATUM	DF	SE	CV%
BLOCK.WP	33	0.410	7.9

GRAIN MEAN DM% 37.3

PLOT AREA HARVESTED 0.00390

75/R/WW/5

WINTER WHEAT

RATES AND TIMES OF N AND VARIETIES

Object: To study the physiological basis of the response of three varieties of wheat to a wide range of nitrogen levels - Long Hoos IV 6.

Sponsor: G.N. Thorne.

Design: 2 blocks of 24 plots.

Whole plot dimensions: 1.65 x 9.76.

Treatments: All combinations of:-

1. Varieties:

	VARIETY
Cappelle	CAPPELLE
Maris Fundin	FUNDIN
Maris Huntsman	HUNTSMAN

2. Nitrogen fertiliser, as 'Nitro-Chalk' (kg N):

	N
None	0
30	30
60	60
90	90
120	120
150	150
180	180
210	210

Basal applications: Manures: (0:14:28) at 820 kg. Fungicide: Tridemorph at 0.53 kg in 340 l. Iodine-benzanilide ('BASF 3170F' at 2.2 kg in 340 l).

Seed: Sown at 200 kg.

Cultivations, etc.:- Ploughed: 25 Sept, 1974. PK applied: 1 Oct.

Spring-tine cultivated: 14 Oct. Power harrowed and seed sown: 6 Nov.

'Nitro-Chalk' applied: 18 Apr, 1975. Tridemorph applied: 13 June.

Iodine-benzanilide applied: 16 June. Harvested by hand: 7 Aug.

Previous crops: Maize 1973, oats 1974.

NOTE: Plant counts were made after germination and shoot counts throughout the season. Dry weight and leaf areas were determined on six occasions between 19 June and 7 Aug. Soil moisture was measured from April to August. Light penetration of the canopy was measured in July. Rates of photosynthesis and translocation were measured twice in June and once in July. Respiration of shoots and ears was measured at the end of June.

75/R/WW/5

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

	N	0	30	60	90	120	150	180	210	MEAN
VARIETY										
CAPPELLE		3.58	4.20	4.75	5.82	6.11	6.76	6.16	6.46	5.48
FUNDIN		3.13	4.58	5.59	5.90	6.40	7.59	7.88	6.85	5.99
HUNTSMAN		3.42	4.04	5.40	6.40	6.61	6.97	6.60	7.01	5.81
MEAN		3.38	4.27	5.24	6.04	6.37	7.11	6.88	6.77	5.76

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

TABLE	VARIETY	N	VARIETY
			N
SED	0.122	0.199	0.345

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

STRATUM	DF	SE	CV%
BLOCK.WP	23	0.345	6.0

GRAIN MEAN DM% 89.8

PLOT AREA HARVESTED 0.00023

75/R/WW/6

WINTER WHEAT

RATES AND TIMES OF N AND K

Object: To study the effects of a range of rates and times of applying nitrogen and potassium on the yield of wheat - Long Hoos III.

Sponsors: O. Talibudeen, A. Penny, M.B. Page.

Design: 2 randomised blocks of 2 plots split into 30.

Whole plot dimensions: 2.67 x 2.74.

Treatments: All combinations of:-

Whole plots: 1. Potassium	POTASH
None	-
Potassium nitrate added to urea treatments (growth stages 6,10,11.1) to give a K:N ratio of 1:10.	K
Sub plots: 2. Nitrogen rates and times (applied as 'Nitro-Chalk' at growth stage 2, as a 5% urea solution to later growth stages) kg N:	N

Growth stage

	2		6		10		11.1	
	Early tillering		Early stem extension		In boot		Grain filling	
30	+	30	+	0	+	0	11--	
30	+	30	+	0	+	30	11-1	
30	+	30	+	0	+	60	11-2	
30	+	30	+	30	+	0	111-	
30	+	30	+	30	+	30	1111	
30	+	30	+	60	+	0	112-	
30	+	90	+	0	+	0	13--	
30	+	90	+	0	+	30	13-1	
30	+	90	+	0	+	60	13-2	
30	+	90	+	30	+	0	131-	
30	+	90	+	30	+	30	1311	
30	+	90	+	60	+	0	132-	
90	+	30	+	0	+	0	31--	
90	+	30	+	0	+	30	31-1	
90	+	30	+	0	+	60	31-2	
90	+	30	+	30	+	0	311-	
90	+	30	+	30	+	30	3111	
90	+	30	+	60	+	0	312-	
90	+	90	+	0	+	0	33--	
90	+	90	+	0	+	30	33-1	
90	+	90	+	0	+	60	33-2	
90	+	90	+	30	+	0	331-	
90	+	90	+	30	+	30	3311	
90	+	90	+	60	+	0	332-	

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plus six extra sub plots per whole plot not given
POTASH but given N:

							EXTRA
0	+	0	+	0	+	0	----
30	+	0	+	0	+	0	1---
60	+	0	+	0	+	0	2---
90	+	0	+	0	+	0	3---
120	+	0	+	0	+	0	4---
180	+	0	+	0	+	0	6---

NOTE: 'Nitro-Chalk' applied: 21 Apr. Urea and potassium nitrate applied:
 21 May (stage 6), 18 June (stage 10), 16 July (stage 11.1).

Basal applications: Manures: (0:20:20) at 310 kg. Weedkillers: Ioxynil with
 mecoprop ('Actril C' at 5.6 l in 280 l).

Seed: Cappelle, sown at 200 kg.

Cultivations, etc.: - Ploughed: 18 Oct, 1974. Rotary cultivated: 28 Nov.

Seed sown: 29 Nov. Weedkiller applied: 22 May, 1975. Cut by hand:
 18 Aug. Previous crops: Fallow 1973, winter oats 1974.

NOTE: Samples of grain and straw were taken at harvest for N determinations.

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WINTER WHEAT

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

POTASH N	-	K	MEAN
11--	3.46	3.58	3.52
11-1	3.58	3.78	3.68
11-2	3.27	3.56	3.42
111-	3.89	3.51	3.70
1111	3.87	3.75	3.81
112-	3.93	3.74	3.83
13--	3.79	3.99	3.89
13-1	4.25	4.10	4.17
13-2	4.08	4.30	4.19
131-	4.24	4.22	4.23
1311	4.36	4.33	4.34
132-	4.27	4.36	4.31
31--	4.74	4.90	4.82
31-1	5.21	5.02	5.12
31-2	5.21	5.29	5.25
311-	5.09	4.93	5.01
3111	5.16	5.09	5.12
312-	5.04	5.55	5.29
33--	4.87	5.43	5.15
33-1	5.23	5.42	5.33
33-2	5.60	5.51	5.55
331-	5.23	5.65	5.44
3311	5.35	5.27	5.31
332-	5.79	5.41	5.60
MEAN	4.56	4.61	4.59

NO POTASH APPLIED

N	----	1---	2---	3---	4---	6---	MEAN
	1.90	3.26	4.12	4.83	5.32	5.47	4.15
GRAND MEAN	4.50						

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

TABLE	N	POTASH*
		N
SED	0.222	0.314

*WITHIN THE SAME LEVEL OF POTASH ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	63	0.314	7.0
GRAIN MEAN DM%	86.1		

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WINTER WHEAT

STRAW TONNES/HECTARE

*** TABLES OF MEANS ***

POTASH	-	K	MEAN
N			
11--	4.38	4.78	4.58
11-1	4.61	4.70	4.66
11-2	4.21	4.50	4.36
111-	4.89	4.34	4.61
1111	4.82	4.64	4.73
112-	4.52	4.54	4.53
13--	4.70	4.84	4.77
13-1	4.51	4.86	4.69
13-2	5.25	4.95	5.10
131-	5.04	5.19	5.12
1311	4.85	5.30	5.08
132-	5.12	5.32	5.22
31--	6.08	6.32	6.20
31-1	6.70	6.36	6.53
31-2	6.70	6.92	6.81
311-	6.58	6.39	6.49
3111	6.69	6.67	6.68
312-	6.94	7.07	7.00
33--	6.16	6.92	6.54
33-1	6.78	7.19	6.99
33-2	7.26	6.93	7.10
331-	6.24	6.95	6.59
3311	6.56	6.64	6.60
332-	7.37	6.90	7.13
MEAN	5.71	5.80	5.75

NO POTASH APPLIED

N	----	1---	2---	3---	4---	6---	MEAN
	2.28	4.19	5.52	6.47	6.93	8.10	5.58
GRAND MEAN	5.72						

STRAW MEAN DM% 83.2

SUB PLOT AREA HARVESTED 0.00048

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WINTER WHEAT

INSECTICIDES AND BULB FLY

Object: To study the effects of different insecticidal seed dressings on attack by wheat bulb fly (*Leptohylemyia coarctata*) and yield of winter wheat - Fosters West.

Sponsor: D.C. Griffiths.

Design: 4 randomised blocks of 8 plots.

Whole plot dimensions: 2.41 x 9.14.

Treatments: 1. Insecticides (% a.i. to wt. of seed):-

		INSECTICIDE
None		NONE
Chlorfenvinphos	0.2	CHLORFEN
Fonofos	0.2	FONOFOS
Isophenphos	0.2	ISOPH 2
Isophenphos	0.5	ISOPH 5
Permethrin (NRDC 143)	0.2	PERMETHR
Pirimiphos ethyl	0.2	PIRIMIPH
Triazophos	0.2	TRIAZOPH

Basal applications: Manures: 'Nitro-Chalk' at 410 kg. Weedkiller: Ioxynil with mecoprop ('Actril C' at 7.0 l in 220 l).

Seed: Maris Templar, sown at 180 kg.

Cultivations, etc.:- Rotary harrowed: 5 Dec, 1974. Seed sown: 10 Dec. N applied: 25 Apr, 1975. Weedkiller applied: 19 May. Combine harvested: 15 Aug. Previous crops: Barley 1973, fallow 1974.

NOTE: Amounts of insecticides on seed were determined. Plant emergence counts were made in January and samples were taken in March for determination of number of damaged shoots and percentage with live wheat bulb fly larvae.

75/R/WW/7

*** TABLES OF MEANS ***

GRAIN TONNES/HECTARE

INSC TCDE	
NONE	4.62
CHLORFEN	5.88
FONOFOS	5.74
ISOPH 2	6.10
ISOPH 5	5.58
PERMETHR	5.99
PIRIMIPH	5.52
TRIAZOPH	5.32
MEAN	5.59

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

TABLE	INSC TCDE
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SED	0.395

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

STRATUM	DF	SE	CV%
BLOCK.WP	21	0.559	10.0

GRAIN MEAN DM% 86.5

PLOT AREA HARVESTED 0.00151