Numerical Results of the Field Experiments 1968

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Rothamsted Experimental Station

Harpenden

Lawes Agricultural Trust

NUMERICAL RESULTS

of the

FIELD

EXPERIMENTS

1968

This report includes only experiments conducted at Rothamsted, Woburn and Saxmundham. The design and supervision of these experiments are the responsibility of the Field Plots Committee (present members: D.J. Watson (Chairman), G.V. Dyke (Secretary), J. McEwen (Deputy Secretary), F.C. Bawden, G.W. Cooke, J.M. Hirst, F.G.W. Jones, J.R. Moffatt, J.A. Nelder).

Price: 10/-

Published 1970

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CLASSICAL EXPERIMENTS*

ROTATION EXPERIMENTS

CROP SEQUENCE EXPERIMENTS*

CROPS IN 1968

CONTENTS 1968 (CONTD.)

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CONTENTS 1968 (CONTD.)

ANNUAL EXPERIMENTS* (continued)

MISCELLANEOUS DATA

* At Rothamsted unless otherwise stated.

NOTES: (1) In the case of the classical, rotation and crop sequence experiments the letters in brackets are the code letter used on the plan. For the annual experiments the letters and numbers are the first plot number.

(2) From 1966 wherever the potato variety King Edward is mentioned, this means the clone free from paracrinkle virus unless the contrary is stated.

CONTENTS 1968 (CONTD.)

CROP SEQUENCE EXPERIMENTS* (continued)

ANNUAL EXPERIMENTS*

CONVERSION FACTORS

Factors for the Conversion of Imperial to Metric Units

1 inch (in.)	= 2·540 centimetres (cm)
1 foot (ft) (=12 in.)	= 30·48 cm
1 yard (yd) (=3 ft)	= 0·9144 metre (m)
1 square yard (sq yd)	= 0·8361 sq m
1 acre (=4840 sq yd)	= 0·4047 hectare (ha)
1 ounce (oz)	= 28·35 grams (g)
1 pound (lb)	= 0·4536 kilogram (kg)
1 hundredweight (cwt) (=112 lb)	= 50·80 kg
1 ton (=2240 lb)	= 1016 kg = 1·016 metric tons (tonnes)
1 pint	= 0·5682 litre
1 gallon (gal) (=8 pints)	= 4·546 litre
1 fluid ounce = 1/20 pint	= 0·02841 litre = 28·41 ml
1 cubic foot	= 28·32 litre

To convert	*Multiply by*
oz/acre to g/ha	70·06
lb/acre to kg/ha	1·121
cwt/acre to kg/ha	125·5
cwt/acre to tonnes/ha	0·1255
tons/acre to kg/ha	2511
tons/acre to tonnes/ha	2·511
gal/acre to litre/ha	11·233

The following factors are accurate to about 2 parts in 100:

1 lb/acre = 1·1 kg/ha
1 gallon/acre = 11 litre/ha
1 ton/acre = 2·5 tonnes/ha

In general reading of the text there will be no great inaccuracy in regarding:

1 lb = 0·5 kg.
1 lb/acre = 1 kg/ha

Temperatures

To convert °F into °C subtract 32 and multiply by $\frac{5}{9}$ (0·556)
To convert °C into °F multiply by $\frac{9}{5}$ (1·8) and add 32

Factors for the Conversion of Metric to Imperial Units

1 centimetre (cm)	=	0·3937 inch (in.) = 0·03281 ft
1 metre (m)	=	1·094 yards (yd)
1 square metre (sq m)	=	1·196 square yards (sq yd)
1 hectare (ha)	=	2·471 acres
1 gram (g)	=	0·03527 ounce (oz)
1 kilogram (kg)	=	2·205 pounds (lb)
1 kg	=	0·01968 hundredweight (cwt) = 0·0009842 ton
1 metric ton (tonne)	=	0·9842 ton
1 litre	=	1·760 pints = 0·2200 gallon (gal)

1 litre = 1000 millilitres (ml) = 35·20 fluid ounces = 0·03531 cubic foot

To convert	*Multiply by*
g/ha to oz/acre	0·01427
kg/ha to lb/acre	0·8921
kg/ha to cwt/acre	0·007966
tonnes/ha to cwt/acre	7·966
kg/ha to tons/acre	0·0003983
tonnes/ha to tons/acre	0·3983
litre/ha to gal/acre	0·08902

Plant nutrients

Plant nutrients are best stated in terms of amounts of the elements (P, K, Na, Ca, Mg, S); the old 'oxide' terminology P_2O_5, K_2O, Na_2O, CaO, MgO, SO_3) is still used in work involving fertilisers and liming since Regulations require statements of P_2O_5, K_2O, etc.

For quick conversions

(accurate to within 2%) the following factors may be used:

$2\frac{1}{3} \times P = P_2O_5$	$\frac{3}{7} \times P_2O_5 = P$
$1\frac{1}{5} \times K = K_2O$	$\frac{5}{6} \times K_2O = K$
$1\frac{2}{5} \times Ca = CaO$	$\frac{7}{10} \times CaO = Ca$
$1\frac{2}{3} \times Mg = MgO$	$\frac{3}{5} \times MgO = Mg$

For accurate conversions:

To convert	*Multiply by*	*To convert*	*Multiply by*
P_2O_5 to P	0·4364	P to P_2O_5	2·2915
K_2O to K	0·8301	K to K_2O	1·2047
CaO to Ca	0·7146	Ca to CaO	1·3994
MgO to Mg	0·6031	Mg to MgO	1·6581

Kale

Fresh weight:	Fresh weight: tons per acre

Oilseed rape

Grain:	Grain (at 90% dry matter): cwt per acre
% fixed oil:	Percentage fixed oil
Yield of fixed oil:	Yield of fixed oil: lb per acre

Radishes

Fresh weight:	Fresh weight: tons per acre

All crops

Plant number:	Plant number: thousands per acre
Mean D.M. %:	Mean dry matter % as harvested

For any new crop, details of abbreviations will be given as necessary.

The following abbreviated forms of reference will be used:

'Results'	(Numerical) Results of the Field Experiments, with year of harvest given.
'Details'	Details of the Classical and Long Term Experiments 1962.

Compound fertilisers indicated thus - (20:10:10) = compound fertiliser (20% N, 10% P2O5, 10% K2O), granular unless otherwise stated.

Treatment symbols will be used in all summaries of results, and in the case of the annual experiments the key will be given with the descriptions of the treatments.

For the classical and long term experiments the full description of the treatments is given in the 'Details': where necessary the key to the symbols was given in the 1964 'Results'.

For crop sequence experiments in progress in 1964 the key was given in the 1964 'Results' and for future experiments it is given in the first year. Modifications will be given as they arise.

NUMERICAL RESULTS OF THE FIELD EXPERIMENTS, 1968

In this report the following conventions are observed unless otherwise stated.

All areas are in acres.

All seed rates, rates of application of fertilisers, sprays etc. are per acre.

All yields and plant numbers are per acre.

The following conventions are used in variate headings:

Wheat, barley, oats, rye, beans etc.

Grain:	Grain (at 85% dry matter): cwt per acre
Straw:	Straw (at 85% dry matter): cwt per acre

Potatoes

Total tubers:	Total tubers: tons per acre
Ware tubers:	Ware tubers: tons per acre
% ware:	Percentage ware (1.5 inch riddle)

Sugar beet

Roots:	Roots (washed): tons per acre
Sugar %:	Sugar percentage
Total sugar:	Total sugar: cwt per acre
Tops:	Tops: tons per acre

Mangolds

Roots:	Roots: tons per acre
Leaves:	Leaves: tons per acre

Swedes

Roots:	Roots: tons per acre

Carrots

Roots:	Roots: tons per acre
Tops:	Tops: tons per acre

Grass, clover, lucerne, etc.

Dry matter:	Dry matter: cwt per acre

Leeks, globe beet

All yields will be in tons per acre

68/A/1.1

WHEAT AND THREE-COURSE ROTATION BROADBALK 1968

(BK)

The 125th year, 1st year of revised scheme

For history, treatments etc. see 'Details' 1967, Station Report for 1966, pp. 229-231 and Station Report for 1968, Part II.

Plots and sections:
The five sections created in 1926 are now all subdivided and renumbered (for details see below). Headlands adequate for turning tractors etc. separate all the new sections.

In 1968 a new plot was made, north of plot 2A. This is called plot 1 and runs the length of old sections II, III, IV only.

Cropping:
The cropping for 1968 - 1971 is as follows:-

Old section	IA	IB	II		III		IV		VA	VB
Last fallow	1951	1966	1967		1965		1964		1963	1958
New section	0	1	2	3	4	5	6	7	8	9
Crop in:										
1968	W	W	Be	W	W	W	F	P	W	W
1969	W	W	W	W	P	F	W	Be	W	W
1970	W	W	P	F	Be	W	W	W	W	W
1971	W	W	Be	W	W	W	F	P	W	W

(W = winter wheat, Be = spring beans, F = fallow, P = potatoes)

Sections 0, 1, 8, 9 will carry continuous wheat except when perennial weeds make a fallow necessary, but all four will not be fallowed in the same year. Sections 2, 4, 7 will continue in the 3-course rotation:

potatoes, spring beans, wheat.

Sections 3, 5, 6 will be cropped in a 3-year cycle:

fallow, wheat, wheat.

All sections carrying wheat will be sprayed as necessary to control weeds, except section 8 which (as hitherto) will receive no weedkiller sprays.

Section 00, soil fumigation to continuous winter wheat: In autumn 1967 a 10 ft length at the West end of every plot of section 0 was fumigated with methyl bromide at 870 lb. Resulting yields were compared with those from an adjoining 10 ft length which received normal treatments only. Both series of plots were harvested by small combine harvester.

In 1968 simazine was applied to beans, no weedkiller was applied to potatoes.

Varieties in 1968:

Wheat: Cappelle Desprez
Beans: Maris Bead (inoculated seed)
Potatoes: Majestic.

Manuring:

(a) Plot 1. The new plot 1, which has received no organic or mineral manures for many years, now receives farmyard manure plus N2PK (see below for details) each year, applied to all crops including fallow (no N to fallow).

(b) Nitrogen fertilisers. Sulphate of ammonia and nitrate of soda are discontinued, 'Nitro-Chalk' 21 being used instead. It is all applied at one time in spring.

For wheat it is applied as a top-dressing, for potatoes before rotary cultivation, for beans to the seedbed. No 'Nitro-Chalk' to fallow.

Rates of N are unchanged except on plots 2A, 9, 15 (for details see below).

The rates and symbols are (lb N), 43 (N1), 86 (N2), 129 (N3) and 172 (N4).

(c) Organic manures. Farmyard manure (FYM) and castor bean meal are applied as hitherto, except that organics are now applied to the fallow section.

Symbol:

D: 14 tons FYM.
R: Castor meal supplying 86 lb N.

(d) Mineral manures. Except on plots 17 and 18 (which now receive PKNaMg at half the standard rates each year) and plot 14 which now receives K in addition to PMg, rates and materials are unchanged:-

Symbol:

P: Superphosphate supplying 30 lb P.
K: Sulphate of potash supplying 80 lb K.
Na: Sulphate of soda supplying 14 lb Na (except plot 12, 51 lb Na).
Mg: Sulphate of magnesia supplying 10 lb Mg (except plot 14, 28 lb Mg).

All these are applied in autumn before ploughing. They are applied for all crops and fallow.

Plot	Treatment till 1967	Treatment from 1968
1	-	DN2PK
2A	D	DN2
2B	D	D
3	None	None
5	PKNaMg	PKNaMg
6	N1PKNaMg	N1PKNaMg
7	N2PKNaMg	N2PKNaMg
8	N3PKNaMg	N3PKNaMg
9	N*1PKNaMg	N4PKNaMg
10	N2	N2
11	N2P	N2P
12	N2PNa	N2PNa
13	N2PK	N2PK
14	N2PMg	N2PKMg
15	N2**PKNaMg	N3PKNaMg
16	N*2PKNaMg	N2PKNaMg
17	N2	N2+1/2(PKNaMg)
18	PKNaMg alternating	N2+1/2(PKNaMg)
19	R	R
20	N2KNaMg	N2KNaMg

** Formerly N in autumn.

NOTE: Plot 20 does not run the full length and is not included in the rotation scheme.

Liming:
Ground chalk was applied under the old scheme in autumn 1967, the following additional applications were made: (cwt chalk)

Plot	7	8	11	13	14	15
Section						
1	-	23	-	-	-	-
6,7	-	69	23	23	-	-
8	23	23	-	23	23	23
9	23	23	-	-	-	-

(remainder : none).

New scheme: Ground chalk will be applied in every third year, starting autumn 1970.

Drilling and planting:
Wheat: Because of the use of a new 15 row drill the plot widths for wheat have been reduced from 36 rows (21 ft) to 30 rows (17 ft 6 ins). Plot 1 has 30 rows. Plots 2A and 2B, originally 20 rows (11 ft 8 ins) each, now have 22 rows (12 ft 10 ins) each.

Beans: 12 rows drilled (plot width 21 ft). Plot 1 has 12 rows. Plots 2A and 2B each have 7 rows (12 ft 3 ins).
Potatoes: 8 rows are planted (plot width 18 ft 8 ins). Plot 1 has 8 rows. Plots 2A and 2B each have 5 rows (11 ft 8 ins).

The manures (with the exception of 'Nitro-Chalk') continue to be applied to the full 21 ft width for all crops. This applies also to plot 1. Dung is applied to plots 2A and 2B as though they were one plot, width 26 ft 3 ins. 'Nitro-Chalk' is applied to the drilled area for wheat, and to the full 21 ft width (13 ft on plot 2A) for beans and potatoes.

		Area of each plot: 2A and 2B	Remainder	Area harvested: All plots
Wheat:	Section: 0	0.0147	0.0201	0.0107
	1	0.0271	0.0370	0.0197
	3, 4 and 5	0.0224	0.0305	0.0163
	8 and 9	0.0236	0.0321	0.0171
Potatoes:	Section: 7	0.0204	0.0326	0.0163
Beans:	Section: 2	0.0214	0.0367	0.0153

Cultivations, etc.:

ALL SECTIONS: Ground chalk applied (including extra chalking): 11 Sept, 1967. FYM applied: 18 Sept. Plots 1 - 3 ploughed, all autumn fertiliser applied: 19 Sept. Remaining plots ploughed: 20 Sept.

CROPPED SECTIONS:

Winter wheat: Seed drilled at 180 lb: 7 Dec, 1967. 'Nitro-Chalk' applied (plot 20 omitted in error): 10 Apr, 1968. All sections except 8 and 9 sprayed with ioxynil at 9 oz and mecoprop at 27 oz in 20 gals: 4 May. Section 9 sprayed with ioxynil at 9 oz and mecoprop at 27 oz in 20 gals, section 5 resprayed with ioxynil at 7.5 oz and mecoprop at 22.5 oz in 20 gals and sections 0, 1, 3 and 4 resprayed with ioxynil at 6 oz and mecoprop at 18 oz in 20 gals: 6 May. The second spray was applied because of rain during spraying on 4th May. 'Nitro-Chalk' applied to plot 20: 17 June. Combine harvested: 26 Aug.

Potatoes: 'Nitro-Chalk' applied: 26 Mar, 1968. All plots rotary cultivated - first time: 28 Apr, second time: 29 Apr. Potatoes machine planted: 29 Apr. Grubbed: 20 May. Rotary ridged: 28 May. Grubbed and then rotary ridged: 19 June. Sprayed with mancozeb at 1.2 lb in 37 gals: 4 July. Sprayed with mancozeb at 1.2 lb and demeton-s-methyl at 3.5 oz in 37 gals: 19 July. Sprayed with mancozeb

at 1.2 lb in 37 gals: 5 Aug. Sprayed with undiluted BOV at 20 gals: 31 Aug. Haulm destroyed mechanically: 13 Sept. Lifted: 19 Sept.

Spring beans: Seed drilled at 200 lb: 4 Mar, 1968. Sprayed with simazine at 1 lb in 33 gals: 5 Mar. 'Nitro-Chalk' applied: 26 Mar. 1.04 lb phorate applied in granules: 22 June. Combine harvested: 6 Sept.

FALLOW SECTION: Ploughed second time: 28 May, 1968, third time: 5 Aug.

Area of each sub plot: Area harvested: 0.0018
(Plots 2A and 2B): 0.0031
(Remainder): 0.0046

Cultivations to section OO: As section O except:- Rotary cultivated: 21 Sept, 1967. Methyl bromide applied: 27 Sept. Combine harvested: 25 Aug, 1968.

BROADBALK WILDERNESS: Cultivations, etc.:-
Ungrazed meadow (north): Topped with rotary grass cutter: 23 Jan, 1968.
Grazed meadow (centre): Grazed by sheep: 2 - 10 May, 1968, 27 - 31 May, 10 - 17 June, 8 - 17 July, 16 - 23 Aug, 18 - 24 Sept, 10 - 16 Oct. Grass topped: 10 May, 18 June, 18 July, 24 Aug, 18 Oct.

68/A/1.6

SUMMARY OF RESULTS

WHEAT

GRAIN

Section	3	4	5	1	8	9	0	
Years after fallow	1	3	3	2	5*	10	17	Mean
Plot								
1	37.8	30.5	29.7					
2A	34.3	38.1	35.3	33.0	35.2	36.4	37.8	35.3
2B	38.8	29.0	30.1	25.2	32.8	34.9	31.3	32.2
3	15.0	10.2	10.4	8.3	17.0	11.6	11.5	12.3
5	22.9	12.8	13.8	8.5	17.5	13.9	14.4	15.2
6	28.6	22.8	21.3	15.9	31.7	24.9	21.0	23.9
7	31.3	29.2	29.6	24.3	27.3	31.1	29.5	28.8
8	22.8	31.5	28.8	27.9	30.4	31.7	29.4	28.5
9	27.2	33.2	31.9	30.4	33.1	30.6	30.1	30.6
10	8.3	18.7	17.6	16.1	21.2	16.2	9.4	14.8
11	6.1	19.6	15.4	21.3	13.8	14.9	16.8	14.7
12	4.4	20.0	19.1	23.5	12.6	13.0	22.4	15.8
13	13.7	27.1	26.2	26.4	16.1	27.7	26.1	22.7
14	15.2	27.9	24.0	26.7	24.9	30.1	25.4	24.4
15	20.7	30.3	31.4	28.1	31.4	32.3	25.3	28.2
16	21.3	25.8	24.5	23.7	29.6	30.4	20.2	24.9
17	27.4	29.9	20.3	22.2	37.9	32.7	27.1	29.6
18	25.9	25.9	23.1	23.2	39.8	32.4	23.5	28.0
19	22.7	20.0	19.0	15.3	24.6	15.9	18.3	19.3
20				8.1			9.6	8.8

Mean D.M. %: 83.6

* No herbicide

% weed seeds plus rubbish
Plot 5, section 1: 8
Plot 8, section 0: 1
Plot 14, section 8: 3
Plot 16, section 0: 1

68/A/1.7

WHEAT

STRAW

Section Years after fallow	3 1	4 3	5 3	1 2	8 5*	9 10	0 17	Mean
Plot								
1	52.3	22.0	33.9					
2A	50.8	50.2	42.8	48.0	60.9	39.0	42.1	47.3
2B	38.5	30.1	31.1	24.1	43.0	34.2	27.8	33.1
3	9.3	7.0	10.3	5.1	10.9	7.3	7.0	8.3
5	18.3	11.5	9.3	6.8	23.0	11.2	11.2	13.3
6	21.4	19.4	18.1	16.2	35.1	23.8	18.5	22.2
7	30.8	31.0	33.0	27.3	45.1	36.4	33.4	34.3
8	31.4	36.0	29.0	34.0	48.1	39.5	31.1	35.5
9	32.7	34.2	28.2	31.7	44.2	35.8	28.8	33.6
10	6.4	14.9	17.2	11.2	17.9	12.4	8.3	12.2
11	12.9	13.9	11.4	19.6	24.3	16.9	14.8	16.6
12	24.5	15.4	15.3	21.1	25.0	14.8	20.7	20.2
13	24.5	26.6	25.3	30.5	42.3	31.2	27.5	30.2
14	16.9	22.3	20.0	24.9	35.7	27.3	22.9	24.6
15	28.8	27.7	25.4	29.1	46.6	32.6	27.2	31.6
16	19.1	20.6	27.2	21.5	39.0	36.2	26.9	28.3
17	25.1	29.2	28.4	22.5	42.1	30.9	25.9	29.1
18	26.6	24.6	25.9	22.1	50.3	38.3	26.2	31.6
19	18.8	17.4	14.3	11.6	31.4	18.5	15.4	18.3
20				5.9			6.7	6.3

Mean D.M. %: 69.5

* No herbicide

68/A/1.8

WHEAT

GRAIN

SECTION OO. FUMIGATED STRIPS

Plots	O	MB	Mean
2A	17.7	17.9	17.8
2B	23.8	18.6	21.2
3	11.8	16.4	14.1
5	12.1	16.2	14.1
6	21.1	24.2	22.6
7	28.0	27.9	27.9
8	23.9	20.8	22.3
9	22.3	21.9	22.1
10	12.7	9.9	11.3
11	19.3	20.7	20.0
12	22.9	20.6	21.7
13	21.3	20.6	20.9
14	21.0	23.0	22.0
15	23.5	22.4	22.9
16	13.9	19.3	16.6
17	23.1	23.5	23.3
18	20.3	25.5	22.9
19	14.2	19.1	16.7
Mean	19.6	20.5	20.0

Mean D.M. %: 81.6

68/A/1.9

Section	2		7	
	SPRING BEANS		POTATOES	
Plots	GRAIN	STRAW	TOTAL TUBERS	% WARE
1	25.5	11.2	13.77	97.7
2A	36.1	23.2	15.73	95.1
2B	42.0	30.8	13.16	94.7
3	10.6	7.2	4.05	93.2
5	32.0	21.1	4.35	91.3
6	34.3	22.8	8.26	93.7
7	36.8	23.5	12.38	96.2
8	37.0	23.1	14.68	94.9
9	35.5	18.5	13.75	97.1
10	6.0	5.4	2.95	88.2
11	3.9	5.2	3.06	77.1
12	4.4	7.3	3.33	82.1
13	27.7	17.1	9.15	94.2
14	16.0	11.6	6.38	93.5
15	31.2	17.9	11.53	93.5
16	28.9	19.7	10.99	95.8
17	28.1	14.6	10.05	95.4
18	26.6	13.0	9.67	96.0
19	20.0	14.5	8.19	95.6
Mean D.M. %:	70.3	76.4		

68/A/2.1

HOOSFIELD: BARLEY AND THREE-COURSE ROTATION 1968

(HB)

The 117th year, 1st year of revised scheme

For history, treatments, etc., see 'Details 1967' and Station Report for 1966.

Cropping and treatments:
A three-course rotation (potatoes, spring beans, spring barley) is now followed on parts of the old series AA, AAS and C. The remainder of these series, the old series O and A and old plots 1N, 2N, 5-0, 5A, 6-1, 6-2, 7-1, 7-2, carry continuous barley.

The arrangement is indicated below:-

Old Series	O	A	AA		AAS		C				1N,2N 5-0,5-A	
(East): 1968	B	B	B	P	P	B	B	B	P	Be	B	(West)
1969	B	B	B	Be	Be	B	B	P	Be	B	B	
1970	B	B	B	B	B	B	B	Be	B	P	B	
1971	B	B	B	P	P	B	B	B	P	Be	B	

(B = Barley, Be = Beans, P = Potatoes)

Varieties in 1968:
Barley - Maris Badger, Beans - Maris Bead (seed inoculated with Rhizobium), Potatoes - Majestic.

The strip manures:

Strip 1 - None
2 - P
3 - KNaMg
4 - PKNaMg

continue to be applied at the same rates, but are now applied in autumn before ploughing. Farmyard manure (D) at 14 tons is applied to plot 7-2 as hitherto and silicate of soda is applied as hitherto (old series AAS). The rate is unchanged but it too is applied before ploughing. Castor meal is no longer applied. All plots (except 1N, 2N, 5-0, 5A) are split into 4 sub plots and (except on plot 7-2) a test is made of none (N0), 43(N1), 86(N2), 129 (N3) lb N as 'Nitro-Chalk 21' applied to the barley seed bed. Potatoes receive basal 'Nitro-Chalk' at 129 lb N before rotary cultivation in spring, beans receive no N. The levels of N to barley are cumulative and are randomized. Plot 7-2 in 1968 had a test on duplicate sub plots of N0 and N1**. Plots

1N (now numbered 581), 2N (571), 5A (551), receive N2, plot 5-0 (561) NO. Plots 5-0, and 5A receive PK, at rates as before but applied before ploughing in autumn.

* NOTE: In 1968 sub plots on the old plots 6-1, 6-2, 7-1 and 7-2 received nitrogen at rates 57 (N1) 115 (N2) and 172 (N3) lb N in error.

Symbols:

D - 14 tons farmyard manure
P - Superphosphate supplying 30 lb P
K - Sulphate of potash supplying 80 lb K
Na - Sulphate of soda supplying 14 lb Na
Mg - Sulphate of magnesia supplying 10 lb Mg
Si - 400 lb silicate of soda.

Standard applications 1968:

To Barley: (weedkiller) dicamba/mecoprop/MCPA ('Banlene Plus' at 4 pints in 33 gals).
To Beans: (weedkiller) simazine at 1 lb in 33 gals, (insecticide) phorate at 1.04 lb (in granules).
To Potatoes: (no weedkiller) (fungicide) mancozeb at 1.2 lb in 37 gals, on 3 occasions, (insecticide) demeton-s-methyl at 3.5 oz applied with fungicide on 2nd occasion, (haulm killer) undiluted BOV at 20 gals.

Liming:

Under the new scheme ground chalk will be applied every third year, starting Autumn 1970.

Area of each sub plot:-

		Area	Area harvested
Old series O and A		0.0317	0.0086
Old plots 6-1, 6-2, 7-1 and 7-2		0.0238	0.0064
Old series AA, AAS and C			
	Barley	0.0087	0.0024
	Potatoes	0.0087	0.0047
	Beans	0.0087	0.0044**
Old plots 1N, 2N, 5-0, 5A (whole plots)		0.0661	0.0101

Barley is harvested by small combine harvester on the old series AA, AAS and C, by large combine on the remainder.

** Plots harvested in pairs.

All crop-rows now run north-south, not east-west as previously.

Cultivations, etc.:-

P, K, Na, Mg applied : 5 Oct, 1967. Silicate of soda and FYM applied, all plots ploughed: 6 Oct.

Barley: Seed drilled at 140 lb: 4 Mar, 1968. 'Nitro-Chalk' applied: 25 Mar. Weedkiller applied: 14 May. Combine harvested: 22 Aug.

Potatoes: 'Nitro-Chalk' applied: 26 Mar, 1968. Plots rotary cultivated, potatoes machine planted: 1 Apr. Grubbed: 20 May. Rotary ridged: 28 May. Fungicide applied, the second time including insecticide: 3 July, 19 July, 5 Aug. BOV applied: 30 Aug. Haulm destroyed mechanically: 13 Sept. Lifted: 23 Sept.

Spring beans: Seed drilled at 200 lb: 4 Mar, 1968. Weedkiller applied: 5 Mar. Insecticide applied: 21 June. Combine harvested: 13 Sept.

68/A/2.4

SUMMARY OF RESULTS

BARLEY

N 1968

Treatment**		0	1	2	3	Mean
			GRAIN			
1852-1968	1852-1966					
-	-	12.5	12.0	13.3	14.7	13.1
-	N	10.5	11.9	9.9	12.5	11.2
P	-	18.9	26.7	32.3	33.6	27.9
P	N	21.0	28.1	30.2	27.3	26.6
K Na Mg	-	8.6	15.4	22.3	23.8	17.5
K Na Mg	N	12.1	12.4	12.8	11.8	12.3
PK Na Mg	-	13.1	28.3	38.6	38.1	29.5
PK Na Mg	N	16.1	31.3	37.3	34.2	29.7
D	-	19.4	37.7	-	-	28.6
-	(D)	10.5	28.6	39.1	36.9	28.8
-	(Ashes)	15.8	29.3	27.3	26.9	24.9
-	-	11.9	18.1	19.5	24.1	18.4
			STRAW			
-	-	0.8	10.4	13.9	17.0	10.5
-	N	4.1	9.0	6.4	10.1	7.4
P	-	10.7	19.0	25.6	24.0	19.8
P	N	12.9	21.2	23.2	23.5	20.2
K Na Mg	-	5.9	10.9	17.9	25.2	15.0
K Na Mg	N	10.7	11.8	16.4	16.2	13.8
PK Na Mg	-	10.9	27.9	34.0	38.3	27.8
PK Na Mg	N	8.5	25.1	34.7	27.8	24.0
D	-	28.4	40.3	-	-	34.3
-	(D)	7.9	21.7	36.6	31.2	24.4
-	(Ashes)	11.0	18.5	19.2	18.8	16.9
-	-	5.4	12.9	13.0	18.9	12.6

** For explanation of symbols see 'Details 1967'

68/A/2.5

BARLEY

N 1968

Treatment**		0	1	2	3	Mean
			GRAIN			
1852-1968	1852-1966					
-	N*	10.1	10.0	11.9	10.6	10.6
Si	N*	19.0	24.4	28.9	24.0	24.1
P	N*	23.7	32.8	33.3	30.0	29.9
P Si	N*	20.9	31.7	35.5	34.3	30.6
K Na Mg	N*	10.7	11.7	14.4	12.8	12.4
K Na Mg Si	N*	22.2	26.8	28.5	33.5	27.7
PK Na Mg	N*	12.7	28.8	33.0	36.6	27.8
PK Na Mg Si	N*	18.8	34.2	40.0	34.6	31.9
-	R(c)	21.9	38.4	33.1	36.1	32.4
-	R(r)	32.0	36.0	34.5	32.5	33.7
P	R(c)	21.3	32.8	35.9	33.3	30.8
P	R(r)	17.6	29.9	36.1	33.1	29.2
K Na Mg	R(c)	26.2	36.0	33.3	35.0	32.6
K Na Mg	R(r)	23.2	33.7	34.4	36.0	31.8
PK Na Mg	R(c)	28.2	34.3	37.4	35.0	33.7
PK Na Mg	R(r)	30.9	33.7	38.1	29.7	33.1
			STRAW			
-	N*	13.8	11.1	13.7	13.7	13.1
Si	N*	20.2	21.6	28.9	27.9	24.7
P	N*	23.1	29.6	35.7	30.3	29.7
P Si	N*	16.0	30.5	37.6	36.1	30.1
K Na Mg	N*	18.1	15.0	22.2	21.3	19.1
K Na Mg Si	N*	17.6	26.3	31.8	36.0	27.9
PK Na Mg	N*	10.2	27.1	34.7	43.0	28.7
PK Na Mg Si	N*	14.8	34.9	41.3	40.1	32.8
-	R(c)	13.8	34.7	28.8	34.4	27.9
-	R(r)	24.5	28.2	26.4	28.9	27.0
P	R(c)	16.3	25.9	32.5	29.6	26.1
P	R(r)	14.5	27.4	29.8	26.3	24.5
K Na Mg	R(c)	19.2	33.7	32.8	32.9	29.7
K Na Mg	R(r)	19.7	30.7	29.4	34.7	28.7
PK Na Mg	R(c)	24.3	30.4	38.0	36.4	32.3
PK Na Mg	R(r)	23.4	29.3	38.8	38.5	32.5

NOTE: (c) = continuous, (r) = rotation. (These treatments were identical in 1968.)

** For explanation of symbols see 'Details 1967'

68/A/2.6

BARLEY

Plots	Treatment**		GRAIN	STRAW
	1852-1968	1852-1966		
551	N2PK	N	32.5	30.6
561	PK	-	11.0	10.1
571	N2	N*	26.1	18.0
581	N2	N*	14.8	11.1

** For explanation of symbols see 'Details 1967'

Mean D.M. %: Grain: 80.9
Straw: 82.3

68/A/2.7

POTATOES

Treatments**		TOTAL TUBERS	% WARE
1852-1968	1852-1966		
-	N*	2.20	80.7
Si	N*	2.66	86.8
P	N*	3.67	79.6
P Si	N*	3.30	77.9
K Na Mg	N*	5.78	94.6
K Na Mg Si	N*	6.84	95.6
PK Na Mg	N*	14.66	95.2
PK Na Mg Si	N*	15.04	95.9
-	R	8.98	94.8
P	R	8.41	92.8
K Na Mg	R	12.03	97.5
PK Na Mg	R	14.95	95.3

** For explanation of symbols see 'Details 1967'

68/A/2.8

BEANS

Treatment**		GRAIN	STRAW
1852-1968	1852-1966		
-	R	24.8	16.9
P	R	22.5	15.5
K Na Mg	R	30.2	21.4
PK Na Mg	R	36.3	28.8

** For explanation of symbols see 'Details 1967'

Mean D.M. %: Grain: 75.9
Straw: 57.2

68/A/3

WHEAT AFTER FALLOW - HOOSFIELD 1968

(HWF)

For history, treatments, etc. see 'Details' 1967.

Area of each plot: 0.1237. Area harvested: 0.0366.

The seed is now treated with a seed-dressing (dieldrin 1967 and 1968) to control wheat bulb fly (Leptohylemyia coarctata).

Cultivations, etc.:
Cropped plots: Ploughed: 5 Sept, 1967. Seed drilled at 180 lb: 19 Oct. Sprayed with ioxynil at 9 oz and mecoprop at 27 oz in 20 gals: 14 May, 1968. Combine harvested: 26 Aug.
Fallow plots: Ploughed 3 times: 5 Sept, 1967, 27 May and 5 Aug, 1968.

SUMMARY OF RESULTS

Plot No.	A1	A4	A2
No. of years of fallow	1	1	3
		GRAIN	
	14.7	13.4	17.4
		STRAW	
	14.4	12.0	13.8

Mean D.M. %: Grain: 84.1
Straw: 70.5

GRASS - AGDELL 1968

(AG)

For history, treatments, etc. see 'Details' 1962 and 'Results' 63/A/4, 64/A/4, 65/A/4, 66/A/4 and 67/A/4.

Area of each microplot: Plots 1 - 4 - 0.0180. Plots 5 - 6 - 0.0162. Area harvested: 1st cut: Plots 1 - 4 - 0.0046. Plots 5 - 6 - 0.0040. 2nd cut: Plots 1 - 4 - 0.0023. Plots 5 - 6 - 0.0020.

P (as triple superphosphate) and K (as muriate of potash) were applied in March 1968 to balance removals by grass in 1967 to all sub plots except P0, which continues to receive no P, and K0, which continues to receive no K.

Rates in cwt P2O5

	Sub plots testing P:-				Sub plots testing K:-			
Plot no.	P0	P1	P2	P4	K0	K1	K2	K4
1	0	0.36	0.32	0.35	0.23	0.36	0.40	0.35
2	0	0.36	0.40	0.31	0.22	0.38	0.39	0.40
3	0	0.39	0.32	0.42	0.18	0.32	0.31	0.32
4	0	0.28	0.27	0.33	0.31	0.36	0.34	0.31
5	0	0.30	0.31	0.30	0.33	0.38	0.38	0.35
6	0	0.30	0.31	0.33	0.22	0.33	0.34	0.33

Rates in cwt K2O

	Sub plots testing P:-				Sub plots testing K:-			
Plot no.	P0	P1	P2	P4	K0	K1	K2	K4
1	1.33	1.80	1.56	1.65	0	1.48	1.80	1.66
2	0.86	1.63	1.99	1.48	0	1.62	1.68	1.84
3	0.99	2.00	1.57	1.99	0	1.38	1.35	1.52
4	0.48	1.68	1.67	1.75	0	1.50	1.67	1.54
5	0.38	1.84	2.04	1.86	0	1.96	1.94	2.00
6	0.18	1.68	1.57	1.72	0	1.53	1.54	1.64

Basal dressing: 'Nitro-Chalk' applied at 0.8 cwt N on 8 Sept, 1967 and 15 Mar, 1968, 30 May, 15 July.

Cultivations, etc.:

Grass: Ground chalk applied at 46 cwt to plots 1 and 2 and to the southern half of plots 3 and 4: 6 June, 1967. Ploughed: 14 June. Rotary cultivated 4 times: 5 July, 21 July, 8 Aug, 24 Aug. Seed

drilled at 30 lb: 7 Sept. P and K applied: 15 Mar, 1968. PO sub plots on plots 4, 5 and 6 resown at 30 lb: 10 Apr. Sprayed with ioxynil at 7.5 oz and mecoprop at 22.5 oz in 32 gals: 11 Apr. Cut 3 times for silage: 27 May, 10 July, 22 Oct. Variety: Timothy S51.

Fallow: Ploughed: 14 June, 1967.

68/A/4.3

SUMMARY OF RESULTS

DRY MATTER

Plot

P K	5	6	3	4	1	2	Mean
			1ST CUT				
0 4	0.0	0.0	3.0	0.0	17.9	5.9	4.5
1 4	20.8	27.6	37.9	31.3	38.1	34.6	31.7
2 4	28.8	27.5	33.0	30.7	33.6	38.6	32.0
4 4	29.8	29.4	36.5	30.7	35.8	40.5	33.8
4 0	17.1	26.0	29.1	29.3	26.5	22.8	25.1
4 1	26.7	31.5	40.3	33.5	35.6	35.7	33.9
4 2	30.5	34.8	31.2	35.6	39.4	35.0	34.4
4 4	31.1	30.8	37.1	39.4	37.7	38.5	35.8
Mean	23.1	25.9	31.0	28.8	33.1	31.5	28.9

Mean D.M. %: 15.0

			2ND CUT				
0 4	3.7	4.8	15.5	8.0	23.7	18.7	12.4
1 4	17.7	16.8	16.2	17.0	22.6	20.3	18.4
2 4	17.9	16.9	19.5	13.1	21.1	22.1	18.4
4 4	17.4	16.8	16.0	20.1	22.0	19.7	18.7
4 0	21.1	15.8	17.8	21.4	17.1	17.1	18.4
4 1	19.0	17.1	13.5	25.8	21.2	23.9	20.1
4 2	20.6	18.2	14.7	15.2	18.6	22.8	18.4
4 4	23.2	15.0	16.0	17.3	20.3	20.1	18.6
Mean	17.6	15.2	16.2	17.2	20.8	20.6	17.9

Mean D.M. %: 15.6

DRY MATTER

Plot

P K	5	6	3	4	1	2	Mean
			3RD CUT				
0 4	19.6	21.3	26.2	24.8	23.1	21.4	22.7
1 4	30.7	28.5	24.4	35.2	26.1	27.8	28.8
2 4	25.3	37.0	28.2	31.8	20.5	27.8	28.4
4 4	25.8	27.0	25.6	24.6	26.2	25.4	25.8
4 0	18.2	23.4	20.2	21.0	14.2	13.1	18.3
4 1	25.8	26.1	22.4	28.2	23.7	24.6	25.1
4 2	24.5	29.5	25.4	27.8	27.9	28.8	27.3
4 4	26.1	26.7	23.2	29.3	24.3	25.7	25.9
Mean	24.5	27.4	24.4	27.8	23.2	24.3	25.3

Mean D.M. %: 20.7

			TOTAL OF 3 CUTS				
0 4	23.3	26.2	44.6	32.8	64.7	46.0	39.6
1 4	69.3	72.9	78.5	83.4	86.8	82.7	78.9
2 4	72.0	81.4	80.7	75.6	75.2	88.4	78.9
4 4	73.0	73.2	78.1	75.3	84.0	85.6	78.2
4 0	56.4	65.3	67.1	71.6	57.8	53.0	61.9
4 1	71.5	74.6	76.2	87.5	80.5	84.2	79.1
4 2	75.7	82.5	71.3	78.6	85.9	86.7	80.1
4 4	80.3	72.4	76.3	86.1	82.4	84.3	80.3
Mean	65.2	68.6	71.6	73.9	77.1	76.4	72.1

Mean D.M. %: 17.1

68/A/5.1

BARNFIELD: FOUR-COURSE ROTATION AND SPRING BEANS AFTER LONG TERM EXPERIMENTS ON ROOT CROPS

(BN)

First year of new scheme, 1968

For history, treatments, etc., see 'Details 1967' and 'Results' 62/A/5.

Cropping and design:

Series O (now Section 1): Continuous spring beans started 1967. Plots are split lengthways into two for a test (unrandomised) of inter-row cultivation none (O) v.1 (H) lb simazine lb simazine for weed control.

The valley (now Section 2), excluding a 30 ft headland between the valley and section 3: As section 1. The remainder of each strip (1, 2, 4, 5, 6, 7, 8,) is split lengthways into two to carry two crops of a four course rotation of potatoes, spring barley, sugar beet and spring wheat, with two crops present each year (barley and wheat in 1968, with barley on the east side, both following beans 1967). Each half is further split breadthways into two for the 4 N rates, which are applied cumulatively (for rates of N see below). Each whole plot has the four rates, N0 and N2 on one crop, N1 and N3 on the other.

In each crop on any one strip Series N and C have the same two rates of N, Series A and AC the other two. In each crop, too, on any one series, strips 1, 4, and 5 have the same two rates of N and strips 2, 6, 7, and 8, the other two. Series N, A, AC, and C are now called Sections 3, 4, 5 and 6 respectively.

Plot 9: Carries a four course rotation as above with one crop present each year (barley in 1968). It is similarly divided into quarter plots to which the 4 rates of N are applied for each crop.

Manuring:

Nitrogen is now applied as 'Nitro-Chalk' only. The rates in lb N are none (N0), 43 (N1), 86 (N2), 129 (N3) to barley and wheat and none (N0), 64 (N1), 129 (N2) and 193 (N3) to potatoes and sugar beet. No N is applied to beans. The mineral fertilisers and FYM to strips continue to be applied. Section 2 (the valley) now receives the strip manures. Application of castor bean meal is discontinued.

Varieties in 1968: Barley: Maris Badger, spring wheat: Kolibri, spring beans: Maris Bead (uninoculated).

Plot areas:
Wheat and barley (quarter plot):
0.0362 (Strip 1: 0.0238). Area harvested: 0.0193.
Beans Section 1 (half plot): 0.0723
(Strips 1 and 8: 0.0475). Area harvested: 0.0362.
Section 2 (half plot): 0.0241.
(Strips 1 and 8: 0.0158). Area harvested: 0.0129.

Cultivations, etc.:- P, K, Na and Mg applied: 22 Sept, 1967. Sub-soiled: 10 Oct. FYM applied, all plots ploughed: 9 Nov.
Spring wheat: Seed drilled at 160 lb: 4 Mar, 1968. 'Nitro-Chalk' applied: 18 Mar. Combine harvested: 7 Sept.
Barley: Seed drilled at 140 lb: 4 Mar, 1968. 'Nitro-Chalk' applied: 18 Mar. Combine harvested: 22 Aug.
Spring beans: Seed drilled at 200 lb: 4 Mar, 1968. Half plots sprayed with simazine at 1 lb in 33 gals: 5 Mar. 1.04 lb phorate applied in granules: 21 June. Combine harvested: 9 Sept.

NOTE: Birds took much of the grain from the plots of strip 1.

68/A/5.3

SUMMARY OF RESULTS

SPRING WHEAT

GRAIN

SERIES

Strip	N 1968	N	A	AC	C
1	0	-	18.0	22.3	-
	1	11.1	-	-	27.3
	2	-	20.9	21.5	-
	3	19.7	-	-	17.8
2	0	18.0	-	-	18.5
	1	-	28.7	31.5	-
	2	25.7	-	-	29.3
	3	-	25.0	27.2	-
4	0	-	16.2	18.3	-
	1	22.3	-	-	28.8
	2	-	34.5	33.7	-
	3	28.3	-	-	23.1
5	0	-	18.1	21.0	-
	1	22.0	-	-	27.6
	2	-	36.4	37.3	-
	3	33.1	-	-	35.8
6	0	11.2	-	-	17.4
	1	-	25.0	31.5	-
	2	24.0	-	-	33.4
	3	-	38.0	40.8	-
7	0	9.5	-	-	19.1
	1	-	30.9	33.0	-
	2	21.9	-	-	34.9
	3	-	33.7	41.9	-
8	0	7.6	-	-	20.0
	1	-	21.4	32.7	-
	2	23.5	-	-	38.4
	3	-	39.9	43.2	-

Mean D.M. %: 77.0

68/A/5.4

SPRING WHEAT

STRAW

SERIES

Strip	N 1968	N	A	AC	C
1	0	-	55.2	28.0	-
	1	40.3	-	-	44.1
	2	-	40.9	54.2	-
	3	60.4	-	-	63.4
2	0	40.0	-	-	31.8
	1	-	56.9	52.8	-
	2	58.1	-	-	57.6
	3	-	69.3	68.5	-
4	0	-	14.8	20.0	-
	1	28.2	-	-	30.8
	2	-	44.2	45.4	-
	3	55.1	-	-	51.9
5	0	-	19.2	22.7	-
	1	35.8	-	-	37.3
	2	-	44.5	48.9	-
	3	51.0	-	-	50.2
6	0	14.0	-	-	19.2
	1	-	33.7	37.9	-
	2	41.4	-	-	46.7
	3	-	56.7	51.6	-
7	0	10.6	-	-	18.5
	1	-	34.1	37.0	-
	2	36.2	-	-	39.9
	3	-	58.7	56.9	-
8	0	12.2	-	-	18.1
	1	-	26.8	35.1	-
	2	36.7	-	-	41.1
	3	-	45.8	48.2	-

Mean D.M. %: 80.4

68/A/5.5

BARLEY

GRAIN

SERIES

Strip	N 1968	N	A	AC	C
1	0	34.5	-	-	32.7
	1	-	30.0	40.6	-
	2	30.1	-	-	28.4
	3	-	26.2	27.3	-
2	0	-	33.3	31.0	-
	1	37.2	-	-	34.2
	2	-	28.4	30.6	-
	3	24.7	-	-	28.2
4	0	16.8	-	-	20.7
	1	-	23.3	35.5	-
	2	33.9	-	-	34.3
	3	-	29.6	26.6	-
5	0	13.5	-	-	21.7
	1	-	36.1	38.4	-
	2	36.6	-	-	35.9
	3	-	36.5	33.7	-
6	0	-	19.0	22.5	-
	1	25.6	-	-	30.1
	2	-	35.9	33.1	-
	3	31.8	-	-	28.3
7	0	-	14.3	20.7	-
	1	25.2	-	-	30.3
	2	-	39.4	36.7	-
	3	30.3	-	-	22.4
8	0	-	19.7	22.8	-
	1	24.9	-	-	33.3
	2	-	36.8	36.1	-
	3	30.4	-	-	24.4
9	0	13.2			
	1	31.4			
	2	29.8			
	3	33.4			

Mean D.M. %: 82.8

68/A/5.6

BARLEY

STRAW

SERIES

Strip	N 1968	N	A	AC	C
1	0	38.3	-	-	38.7
	1	-	60.0	59.5	-
	2	66.8	-	-	70.5
	3	-	57.1	52.4	-
2	0	-	35.1	35.2	-
	1	55.9	-	-	55.9
	2	-	58.5	59.6	-
	3	59.5	-	-	60.1
4	0	15.8	-	-	16.7
	1	-	26.7	36.7	-
	2	48.2	-	-	42.4
	3	-	48.9	51.6	-
5	0	12.0	-	-	19.9
	1	-	32.4	35.5	-
	2	46.3	-	-	44.7
	3	-	42.6	45.6	-
6	0	-	16.8	22.3	-
	1	26.4	-	-	27.5
	2	-	43.4	44.8	-
	3	42.5	-	-	45.0
7	0	-	11.8	19.2	-
	1	25.5	-	-	29.9
	2	-	44.2	47.3	-
	3	41.8	-	-	47.9
8	0	-	29.0	19.1	-
	1	28.9	-	-	29.7
	2	-	36.0	25.2	-
	3	34.9	-	-	40.2
9	0	11.8			
	1	29.4			
	2	38.1			
	3	46.2			

Mean D.M. %: 79.7

68/A/5.7

SPRING BEANS

SERIES

Strip	O	H	Mean
	GRAIN		
1	19.2	26.7	23.0
2	31.9	29.6	30.7
4	30.8	16.7	23.7
5	32.7	11.8	22.2
6	32.1	15.8	23.9
7	32.5	11.9	22.2
8	25.7	7.6	16.7
Mean	29.3	17.2	23.2
	STRAW		
1	5.1	17.8	11.5
2	26.8	16.0	21.4
4	15.2	8.1	11.6
5	17.3	4.0	10.7
6	16.8	5.4	11.1
7	13.7	5.3	9.5
8	10.9	1.7	6.3
Mean	15.1	8.3	11.7

Mean D.M. %: Grain: 79.2
Straw: 82.2

HAY - THE PARK GRASS PLOTS

(PG)

For history, treatments etc. see 'Details' 1967 and 'Results' 65/A/6.

Ground chalk was applied as follows (lb $CaCO_3$):-

Plot	Sub-plot a	b	c
1	1786	-	2800
2,3,4/1	1786	-	-
4/2	1786	1120	5040
7,8	1786	-	-
9	1786	2240	3920
10	1786	1120	4480
11/1	3572	5600	4480
11/2	3572	3360	4480
13	1786	-	1120
14,16,17	1786	-	-
18	1020	-	2240

Whole plots:-

5/1*	5490
5/2*	4930
6*	6720
18/2,19,20	1020
12	-
15	-

* Plots at present used for microplot experiments.

Cultivations, etc.: Mineral fertilisers applied: 21 Nov, 1967. Ground chalk applied to sub-plots: 13 Dec. Ground chalk applied to whole plots: 28 Dec. Nitrogenous fertilisers applied: 1st dressing - 27 Mar, 1968, 2nd dressing - 22 Apr. Cut twice: 11 June, 5 Nov.

SUMMARY OF RESULTS

DRY MATTER

Plot No	1st cut a	1st cut b	1st cut c	1st cut d	Mean	2nd cut a	2nd cut b	2nd cut c	2nd cut d	Mean	Total of 2 cuts a	Total of 2 cuts b	Total of 2 cuts c	Total of 2 cuts d	Total
1	14.3	10.8	9.8	6.2	10.3	15.5	13.6	6.6	6.4	10.5	29.8	24.4	16.4	12.6	20.8
2	11.0	14.9	10.6	10.2	11.7	16.5	15.8	16.5	17.4	16.5	27.5	30.6	27.1	27.6	28.2
3	13.8	15.4	11.1	12.1	13.1	14.1	14.9	16.6	18.7	16.1	27.9	30.4	27.7	30.8	29.2
4-1	14.6	16.9	16.1	16.1	15.9	18.9	17.6	22.2	23.3	20.5	33.5	34.5	38.3	39.4	36.4
4-2	27.9	28.0	26.0	18.4	25.1	14.0	12.1	12.1	10.9	12.3	41.9	40.1	38.0	29.3	37.3
7	47.9	42.9	20.0	21.4	33.1	24.2	22.9	27.7	26.8	25.4	72.1	65.9	47.8	48.2	58.5
8	13.8	14.2	16.1	15.9	15.0	17.5	19.5	24.1	23.6	21.2	31.3	33.7	40.2	39.5	36.2
9	53.1	49.8	38.0	39.6	45.1	25.9	21.6	25.7	12.7	21.5	79.0	71.4	63.7	52.3	66.6
10	33.6	33.6	27.4	22.1	29.1	16.0	14.5	16.8	10.0	14.3	49.6	48.0	44.2	32.1	43.5
11-1	50.3	47.3	60.4	14.9	43.2	25.9	21.5	26.9	25.7	25.0	76.2	68.8	87.3	40.6	68.2
11-2	55.5	57.7	62.8	24.1	50.0	37.2	39.0	38.1	28.0	35.6	92.7	96.8	100.9	52.1	85.6
12	10.7		10.2		10.5	30.0		30.1		30.1	40.7		40.3		40.5
13	34.0	34.2	32.5	25.3	31.5	39.0	33.6	38.9	30.5	35.5	73.0	67.9	71.4	55.8	67.0
14	49.4	43.2	49.3	45.7	46.9	21.6	28.2	24.6	25.7	25.0	71.0	71.4	73.9	71.4	71.9
15	37.7		16.8		27.2	21.0		21.2		21.1	58.6		38.0		48.3
16	42.3	48.8	38.3	39.6	42.3	21.8	21.6	27.2	22.4	23.2	64.2	70.4	65.4	62.1	65.5
17	17.9	18.3	22.7	19.7	19.7	14.5	14.9	21.8	18.0	17.3	32.4	33.2	44.5	37.7	37.0
18-1			15.5	11.2	13.4			28.7	23.5	26.1			44.1	34.8	39.5
18-2					20.0					23.3					43.2
18-3	21.9	23.3			22.6	25.4	23.5			24.5	47.3	46.8			47.1
19-1					18.3					46.9					65.2
19-2					30.0					29.0					59.0
19-3					26.6					38.1					64.7
20-1					36.2					38.4					74.6
20-2					37.4					33.6					71.0
20-3					39.4					36.3					75.7

Mean D.M. %: 1st cut: 22.8 2nd cut: 21.5 Total of 2 cuts: 22.2

68/A/6.2

68/A/7

EXHAUSTION LAND, HOOSFIELD 1968

(EX)

For history, treatments, etc. see 'Details' 1967.

Area harvested: 0.0741.

Cultivations, etc.: Ploughed: 5 Sept, 1967. Seed combine drilled at 140 lb: 28 Feb, 1968. Sprayed with dicamba, mecoprop and MCPA (Banlene Plus at 4 pints in 32 gals): 17 May. Combine harvested: 21 Aug. Variety: Maris Badger.

SUMMARY OF RESULTS

Plot		Grain	Straw
1	-	9.8	9.2
2	-	12.5	11.7
3	D	29.2	27.2
4	D	34.3	29.8
5	N2	9.2	9.9
6	N*2	9.5	9.6
7	N2PKNaMg	19.1	21.7
8	N*2PKNaMg	24.5	24.9
9	P	20.5	22.3
10	PK	27.0	27.1
Mean		19.6	19.3
Mean D.M. %:		76.2	87.4

68/A/8.1

CLOVER - ROTHAMSTED GARDEN

(EGC)

The 115th year

(Revised 1968)

For history etc., see 'Details' 1967.

Basal applications: 0.6 cwt P_2O_5, 1.2 cwt K_2O applied as (0:14:28) in winter 0.6 cwt K_2O as muriate of potash after each cut except the last.

Test of N x Mg: The test of 0 (N0) v 1.0 (N1) cwt N per cut introduced in 1967 is continued. A further test of 0 (Mg0) v 100 (Mg1) lb Mg as sulphate of magnesia ($MgSO_4.7H_2O$) is applied to quarter plots (50 lb Mg in winter and 50 lb after the 1st cut).

Variety: S123.

Cultivations, etc.: Basal PK and test Mg applied: 24 Jan, 1968. Area hand weeded: 27 Feb. All plants removed and carted, area hand hoed: 12 Mar. Area raked down to seedbed, seed sown at 30 lb, 'Nitro-Chalk' applied: 29 Mar. Cut, basal potash, test Mg and 'Nitro-Chalk' applied: 12 Aug. Cut second time: 17 Oct.

NOTE: Yields were not recorded from N0Mg0 and N1Mg0 plots for the 1st cut because of rabbit damage.

68/A/8.2

SUMMARY OF RESULTS

DRY MATTER

	N0Mg0	N1Mg0	N0Mg1	N1Mg1
1st cut			17.0	15.8
2nd cut	10.6	13.7	17.7	15.7
Total of 2 cuts			34.7	31.5

Mean D.M. %: 1st cut: 16.1
2nd cut: 15.8
Total of 2 cuts: 16.0

SAXMUNDHAM

ROTATION I 1968

(SA)

For history, treatments, rotations etc. see Rothamsted Report for 1964, pp. 228 - 232 and 'Results' 66/A/10. For previous years' results see 'Results' 64/A/10, 65/A/10, 66/A/10, 67/A/9.

Area harvested:

New treatments,	Sugar beet:	0.0072
	Barley:	0.0257
	Beans and wheat:	0.0230
Old treatments,	Sugar beet:	0.0017
	Barley, beans and wheat:	0.0014

In 1968 nitrogen was applied to sugar beet, barley and wheat at 1.0 cwt N in spring to all fertiliser plots receiving N. On the N2 plots this dressing was followed by a top-dressing of 0.5 cwt N (based on the needs of the crops as indicated by tissue-analysis). Nitrogen applications to beans and to FYM plots were unaltered.

Cultivations, etc.:

Sugar beet: FYM applied: 7 Sept, 1967. Ploughed: 7 and 18 Sept. Bonemeal applied: 5 Mar, 1968. P and K applied: 14 Mar. 'Nitro-Chalk' applied: 20 Mar. Seed drilled: 27 Mar. Sprayed with pyramin at 2.2 lb in 33 gals: 2 Apr. Singled: 20 May. Sprayed with DDT at 9 oz in 18 gals: 23 May. Additional 'Nitro-Chalk' applied to N2 plots: 25 July. Lifted: 24 Sept - 1 Oct. Variety: Klein E.

Barley: FYM applied, all plots ploughed: 7 Sept, 1967. Bonemeal applied: 5 Mar, 1968. P and K applied: 6 Mar. Seed drilled: 12 Mar. 'Nitro-Chalk' applied: 20 Mar. Sprayed with mecoprop at 27 oz and 2,4-D at 6.75 oz in 18 gals: 3 May. Additional 'Nitro-Chalk' applied to N2 plots: 28 May. Combine harvested: 22 Aug. Variety: Zephyr.

Spring beans: FYM applied: 7 Sept, 1967. Ploughed: 7 - 11 Sept. Bonemeal applied: 5 Mar, 1968. P and K applied: 6 Mar. Seed drilled: 8 Mar. 'Nitro-Chalk' applied: 20 Mar. Sprayed with simazine at 1 lb in 33 gals: 21 Mar. Combine harvested: 9 Sept. Variety: Maris Bead.

68/A/9.2

Winter wheat: FYM applied: 7 Sept, 1967. Ploughed: 7 - 9 Sept. Bonemeal applied: 16 Sept. P and K applied: 5 Oct. Seed drilled: 9 Oct. 'Nitro-Chalk' applied: 20 Mar, 1968. Sprayed with mecoprop at 32.5 oz and 2,4-D at 8 oz in 18 gals: 18 Apr. Additional 'Nitro-Chalk' applied to N2 plots: 15 May. Combine harvested: 22 Aug. Variety: Cappelle.

SAXMUNDHAM

ROTATION II 1968

(SB)

For history, treatments, rotations, etc. see Rothamsted Report for 1964, pp. 228 - 232 and 'Results' 66/A/11. For previous years' results see 'Results' 64/A/11, 65/A/11, 66/A/11, 67/A/10.

Area of each plot: 0.0273. Area harvested: 0.0149.

Barley was grown over the whole area. No treatments (phosphate or FYM) were applied.

Basal manuring: 3 cwt (25:0:16).

Cultivations, etc.:- Ploughed: 16 - 23 Oct, 1967. Basal NK compound applied: 6 Mar, 1968. Seed drilled: 11 Mar. Sprayed with mecoprop at 36 oz and 2,4-D at 9 oz in 32 gals: 3 May. Combine harvested: 14 Aug. Variety: Zephyr.

SUMMARY OF RESULTS

BARLEY

Plot	Treatment 1966 and 67	GRAIN	STRAW
1	P0	24.2	12.3
2	P0	29.7	15.8
3	P0	34.3	24.2
4	D	32.0	22.2
5	DP1	31.1	23.7
6	P1	31.4	21.5
7	P2	32.7	21.2
8	P0	32.2	21.9
Mean		31.0	20.4

Mean D.M. %: Grain: 84.6
Straw: 84.6

SUMMARY OF RESULTS

NEW TREATMENTS

Treatment 1899 -1965	Treatment from 1966	SUGAR BEET Roots	Sugar %	Total sugar	Tops	BARLEY Grain	Straw	SPRING BEANS Grain	WINTER WHEAT Grain	Straw
D	DN1	19.66	16.2	63.7	13.59	30.7	32.2	27.6	48.4	40.0
B	B	7.95	15.8	25.1	3.93	10.5	6.1	23.6	27.8	20.5
N	N2P2	16.95	15.6	52.8	15.71	31.3	19.4	24.5	40.0	28.5
P	N1P1	15.27	16.2	49.5	10.32	34.3	20.0	25.4	41.8	31.0
K	N1P2K	15.36	16.6	51.1	9.32	31.8	18.8	25.6	42.6	38.9
-	N1P2	15.40	16.3	50.0	9.57	28.7	20.0	25.8	45.9	37.5
PK	N1P1K	16.17	16.4	53.2	11.03	27.6	20.6	28.4	42.5	28.7
NK	N2P2K	15.80	15.7	49.6	14.58	26.5	18.6	27.5	47.6	30.9
NP	N2P1	16.74	15.3	51.1	16.21	38.0	23.8	22.0	43.5	26.7
NPK	N2P1K	16.77	15.5	51.9	15.99	33.5	19.7	30.5	42.7	30.6
Mean		15.61	16.0	49.8	12.02	29.3	19.9	26.1	42.3	31.3
Mean D.M. %:						85.0	82.7	80.4	79.7	72.6

68/A/9.3

https://doi.org/10.23637/ERADOC-1-58

68/A/9.4

SUMMARY OF RESULTS

OLD TREATMENTS

Plot No	Treatment 1899-1967	SUGAR BEET Roots	Sugar %	Total sugar	Tops	BARLEY Grain	Straw	SPRING BEANS Grain	WINTER WHEAT Grain	Straw
1	D	18.50	16.5	61.2	10.26	28.9	22.9	31.3	36.9	65.3
2	B	8.64	16.5	28.6	4.86	10.9	8.1	24.6	28.8	39.2
3	N	5.67	16.6	18.8	5.13	18.8	14.3	23.1	31.9	44.5
4	P	7.16	16.5	23.6	4.86	10.9	7.1	24.3	23.7	32.7
5	K	6.35	16.7	21.2	4.32	9.1	7.8	13.7	18.1	25.2
6	-	5.13	16.4	16.9	4.05	11.2	8.0	15.5	19.8	28.8
7	PK	8.37	16.7	28.0	5.81	13.4	9.3	29.2	19.5	28.7
8	NK	4.73	16.1	15.2	5.13	18.9	15.4	24.8	27.5	41.3
9	NP	11.88	16.5	39.2	6.75	25.9	24.9	23.7	34.2	46.4
10	NPK	12.69	16.9	42.8	6.48	23.5	25.0	30.4	36.0	48.3
Mean		8.91	16.6	29.6	5.77	17.1	14.3	24.1	27.7	40.0
Mean D.M. %:						70.7	52.2	75.2	69.8	53.7

68/B/1.1

LEY AND ARABLE ROTATIONS

(HLA and FLA)

Highfield and Fosters Field 1968, the 20th year.

For details of treatments, rotations, etc. see 'Details' and 'Results' 63/B/1, 64/B/1, 65/B/1, 66/B/1 and 67/B/1.

Revised cropping: From 1968 the sequence of test crops has been changed to potatoes, winter wheat, barley. This new sequence started on blocks 6 and 7 (Highfield) and blocks 8 and 9 (Fosters). Apart from blocks 1 - 4 on each field, which are retained in the three year cycles of treatment and test crops, no further treatment sequences will be started. After three test crops, blocks will be sown to winter wheat each year. This scheme started on blocks 5 and 8 (Highfield) and blocks 5 and 7 (Fosters). Apart from blocks 1 - 4 on each field, old and reseeded grass is now ploughed up for test cropping as blocks enter either 1st or 4th test crop phase.

Manures to 1st test crop, potatoes:-

N to 1/8th plots: None (N0), 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt as 'Nitro-Chalk' shortly before planting.

P205 to 1/16th plots (in cwt):

Sub plots without FYM (F): 1.95 (P0) v 2.85 (P1)

Sub plots with FYM (D): 1.50 (P0) v 2.40 (P1)

NOTE: In 1968 because of an excess application to Fosters Field the rates were revised for both fields as follows:

F sub plots: 2.85 (P0) v 3.75 (P1)

D sub plots: 2.40 (P0) v 3.30 (P1)

K20 to 1/16th plots (in cwt):

Sub plots without FYM (F): 1.80 (K0) v 2.70 (K1)

Sub plots with FYM (D): 0.90 (K0) v 1.80 (K1)

FYM to 1/4 plots: None (F) v 12 tons (D) applied on the plough furow and rotary cultivated in. No FYM is applied to the R and G plots coming into potatoes in 1968 and 1969, these plots being treated as F plots.

P and K are applied as superphosphate and muriate of potash except the 'dung equivalent' P and K (0.45 cwt P205 and 0.90 K20) which is compound fertiliser (0:14:28). All are applied on the plough furrow and rotary cultivated in.

Corrective K dressings to 1st test crop potatoes designed to bring the K levels on both fields to that of the Fosters LC plots, were ploughed in as muriate of potash in autumn 1967 as follows (in cwt):-

Rotation	Fosters	Highfield
AH	5.5	6.7
Lu	3.8	4.8
LC	None	0.6
LN	2.9	4.4
RC	None	None
RN	3.5	3.5
GC	None	None
GN	None	3.5

NPK dressings to 4th test crop, winter wheat:-

Basal dressing: 0.9 cwt P2O5, 0.9 cwt K2O as compound fertiliser (0:20:20) half combine drilled, half by hand.

Test nitrogen to 1/8th plots:

Highfield (all rotations): 0.3 (N1), 0.6 (N2), 0.9 (N3), 1.2 (N4) cwt N as 'Nitro-Chalk' in spring.

Fosters (all rotations): 0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' in spring.

Varieties:

Potatoes, 1st Test Crop: King Edward
2nd Test Crop: Majestic
Barley, 3rd Test Crop: Maris Badger
Winter wheat, 4th Test Crop: Cappelle
Sugar Beet, 2nd Treatment Crop: Klein E
Oats, 3rd Treatment Crop: Manod

NOTE: Highfield: The fourth test crop wheat was severely attacked by take-all (Ophiobolus graminis) on both blocks, especially wheat after lucerne and arable rotations. The wheat on the 2 plots ploughed in autumn 1967 from old grass was badly damaged by wireworms (Agriotes spp.), wheat flea beetle larvae (genus Phyllotreta), and unidentified stem boring larvae.

HIGHFIELD

2nd year Treatment Crops:

All-grass ley: Basal PK compound applied: 20 Nov, 1967. NK compound applied: 28 Mar, 1968. Cut four times: 23 May, 26 June, 12 Aug, 25 Oct. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: 20 Nov, 1967. Muriate of potash applied: 29 Mar, 1968. Cut four times: 24 May, 26 June, 12 Aug, 25 Oct. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: 20 Nov, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: 22 Jan, 1968. Cut four times: 30 May, 4 July, 29 Aug, 28 Oct.

Sugar beet: Ploughed: 25 July, 1967. Ploughed second time: 18 Sept. Muriate of potash applied: 4 Jan, 1968. Basal NPK compound applied: 11 Mar. 'Nitro-Chalk' applied: 27 Mar. Seed drilled at 8 lb: 29 Mar. Singled: 21 May. Sprayed with demeton-s-metyl at 7 oz in 37 gals: 12 June, Lifted: 12 Dec.

3rd year Treatment Crops:

All-grass ley: Basal PK compound applied: 20 Nov, 1967. NK compound applied: 28 Mar, 1968. Cut four times: 23 May, 26 June, 12 Aug, 25 Oct. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: 20 Nov, 1967. Muriate of potash applied: 29 Mar, 1968. Cut four times: 23 May, 26 June, 12 Aug, 25 Oct. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: 20 Nov, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: 22 Jan, 1968, at 0.9 lb ion in 37 gals: 12 July, at 0.75 lb ion in 20 gals: 10 Sept. Cut three times: 30 May, 4 July, 29 Aug.

Oats: Ploughed: 22 Nov, 1967. Seed combine drilled at 160 lb: 8 Mar, 1968. 'Nitro-Chalk' applied: 14 Mar. Combine harvested: 23 Aug.

1st Test Crop, Potatoes:-

Corrective K applied: 14 Nov, 1967. Ploughed: 20 Nov. All fertilizers applied: 1 - 10 Apr, 1968. FYM applied: 16 Apr. All plots following reseeded and permanent grass sprayed with aldrin at 3 lb in 37 gals, all plots rotary cultivated, potatoes machine planted: 17 Apr. Sprayed with paraquat at 0.5 lb ion plus linuron at 0.75 lb in 40 gals: 6 May. Grubbed: 6 June. Rotary ridged: 7 June. Sprayed with mancozeb three times at 1.2 lb in 37 gals, the second time including demeton-s-methyl at 3.5 oz: 3 July, 19 July, 5 Aug. Sprayed with undiluted BOV at 15 gals: 30 Aug. Lifted: 24 Sept.

2nd Test Crop, Potatoes:-

FYM applied: 30 Oct, 1967. Ploughed: 31 Oct. NPK fertilisers applied: 4 - 9 Apr, 1968. Rotary cultivated, potatoes machine planted: 10 Apr. Sprayed with paraquat at 0.38 lb ion plus linuron at 0.75 lb in 33 gals: 3 May. Grubbed: 6 June. Rotary ridged: 12 June. Sprayed with mancozeb three times at 1.2 lb in 37 gals, the second time including demeton-s-methyl at 3.5 oz: 3 July, 19 July, 5 Aug. Sprayed with undiluted BOV at 15 gals: 30 Aug. Lifted: 25 Sept.

3rd Test Crop, Barley:-

Ground chalk applied, plots ploughed: 29 Sept, 1967. Seed combine drilled at 140 lb: 27 Feb, 1968. 'Nitro-Chalk' applied: 14 Mar. Sprayed with mecoprop at 42 oz and 2,4-D at 10.5 oz in 40 gals: 2 May. Combine harvested: 21 Aug.

4th Test Crop, Wheat:-

Ploughed: 30 Sept, 1967. Seed combine drilled at 180 lb: 23 Oct. Remaining half of basal PK compound applied by hand: 4 Dec. 'Nitro-Chalk' applied: 17 - 23 Apr, 1968. Sprayed with mecoprop at 42 oz and 2,4-D at 10.5 oz in 40 gals: 2 May. Combine harvested: 24 Aug.

Permanent grasses: 18th and 20th experimental years permanent (old) grass, blocks 1, 2, 4, 9, 10, 11, 12, 18th and 20th years reseeded grass, blocks 1, 4, 9 and 12. Ground chalk applied to blocks 9 and 12: 29 Sept, 1967. Basal PK compound applied: 20 Nov. NK compound applied to 'all grass' half plots, muriate of potash to 'clover grass' half plots: 28 Mar, 1968. Cut five times (except blocks 9 and 12 four times): 23 May, 26 June, 12 Aug, 5 Sept and (except blocks 9 and 12) 25 Oct. NK oompound and muriate of potash applied to appropriate half plots after each cut except the last (4 and 3 applications respectively).

FOSTERS

2nd year Treatment Crops:-

All-grass ley: Basal PK compound applied: 20 Nov, 1967. NK oompound applied: 28 Mar, 1968. Cut four times: 23 May, 1 July, 12 Aug, 25 Oct. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: 20 Nov, 1967. Muriate of potash applied: 28 Mar, 1968. Cut four times: 23 May, 1 July, 12 Aug, 25 Oct. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: 20 Nov, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: 22 Jan, 1968. Cut four times: 30 May, 4 July, 30 Aug, 28 Oct.

Sugar beet: Ploughed: 25 July, 1967. Ploughed second time: 18 Sept. Muriate of potash applied: 4 Jan, 1968. Basal NPK compound applied: 11 Mar. 'Nitro-Chalk' applied: 27 Mar. Seed drilled at 8 lb: 29 Mar. Singled: 23 May - 4 June. Sprayed with demeton-s-methyl at 7 oz in 37 gals: 12 June. Lifted: 12 Dec.

3rd year Treatment Crops:-

All-grass ley: Basal PK compound applied: 20 Nov, 1967. NK compound applied: 28 Mar, 1968. Cut four times: 23 May, 1 July, 12 Aug, 25 Oct. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: 20 Nov, 1967. Muriate of potash applied: 28 Mar, 1968. Cut four times: 23 May, 1 July, 12 Aug, 25 Oct. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: 20 Nov, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: 22 Jan, 1968, at 0.9 lb ion in 37 gals: 9 July, at 0.75 lb ion in 20 gals: 30 Aug. Cut three times: 30 May, 4 July, 30 Aug.

Oats: Ploughed: 22 Nov, 1967. Seed combine drilled at 160 lb: 8 Mar, 1968. 'Nitro-Chalk' applied: 14 Mar. Combine harvested: 24 Aug.

1st Test Crop, Potatoes:-

Corrective K applied: 14 Nov, 1967. Ploughed: 17 Nov. Superphosphate and muriate of potash applied: 1 Apr, 1968. Superphosphate applied: 4 Apr. Dung equivalent PK compound, 'Nitro-Chalk', superphosphate and muriate of potash applied: 10 Apr. FYM applied, rotary cultivated, potatoes machine planted: 16 Apr. Sprayed with paraquat at 0.5 lb ion plus linuron at 0.75 lb in 40 gals: 6 May. Grubbed: 6 June. Rotary ridged: 7 June. Sprayed with mancozeb three times at 1.2 lb in 37 gals, the second time including demeton-s-methyl at 3.5 oz: 3 July, 19 July, 5 Aug. Sprayed with undiluted BOV at 15 gals: 30 Aug. Lifted: 24 Sept.

NOTE: Aldrin was not applied on Fosters.

2nd Test Crop, Potatoes:-

FYM applied, plots ploughed: 30 Oct, 1967. NPK fertilisers applied: 4 - 9 Apr, 1968. Rotary cultivated, potatoes machine planted: 10 Apr. Sprayed with paraquat at 0.38 lb ion plus linuron at 0.75 lb in 33 gals: 3 May. Grubbed: 6 June. Rotary ridged: 12 June. Sprayed with mancozeb three times at 1.2 lb in 37 gals, the second time including demeton-s-methyl at 3.5 oz: 3 July, 19 July, 5 Aug. Sprayed with undiluted BOV at 15 gals: 30 Aug. Lifted: 27 Sept.

3rd Test Crop, Barley:-

Ploughed: 25 Sept, 1967. Seed combine drilled at 140 lb: 27 Feb, 1968. 'Nitro-Chalk' applied: 14 Mar. Sprayed with mecoprop at 42 oz and 2,4-D at 10.5 oz in 40 gals: 2 May. Combine harvested: 21 Aug.

4th Test Crop, Wheat:-

Ploughed: 18 Sept, 1967. Seed combine drilled at 180 Lb: 19 Oct. Remaining half of basal PK compound applied by hand: 4 Dec. 'Nitro-Chalk' applied: 17 Apr. Sprayed with mecoprop at 42 oz and 2,4-D at 10.5 oz in 40 gals: 2 May. Combine harvested: 24 Aug.

Permanent grasses:-

18th and 20th year reseeded grass, blocks 1, 3, 6 and 11. Basal PK compound applied: 20 Nov, 1967. NK compound applied to 'all-grass' half plots and muriate of potash to 'clover-grass' half plots: 28 Mar, 1968. Cut five times: 23 May, 26 June, 12 Aug, 5 Sept, 25 Oct. NK compound and muriate of potash applied to appropriate half plots after each cut except the last. (N.B. Plots on blocks 6 and 11 were ploughed up before the fifth cut was taken).

Standard errors per plot.

Potatoes: 2nd Test Crop. Total tubers:

Highfield: Sub plot: 1.137 or 6.9% (12 d.f.)
Fosters: Sub plot: 0.853 or 5.6% (12 d.f.)

68/B/1.7

SUMMARY OF RESULTS

WHEAT 4TH TEST CROP

1962 - 1964

	Lu	LC	LN	AH	R	Mean	G
			GRAIN				
			HIGHFIELD				
Mean	24.6	34.0	33.8	28.6	35.6	31.3	25.2
1968							
N0	21.1	36.6	34.8	25.0	37.4	31.0	24.3
N1	24.2	33.4	34.3	28.8	36.7	31.5	27.4
N2	26.5	32.9	33.0	29.8	34.5	31.3	23.2
N3	26.5	33.0	33.1	30.9	33.7	31.5	25.8
1966							
F	25.6	32.6	34.6	30.2	35.3	31.7	
D	23.6	35.3	33.0	27.0	35.8	31.0	

General mean: 30.5
General mean D.M. %: 84.3

			FOSTERS			
Mean	40.4	39.7	40.0	37.9	40.3	39.7
1968						
N0	38.9	42.3	41.0	37.9	43.1	40.6
N1	42.4	40.3	43.3	39.5	41.7	41.4
N2	41.1	40.6	37.0	38.0	38.7	39.1
N3	39.2	35.5	38.8	36.0	37.8	37.5
1966						
F	39.8	40.7	39.6	38.5	40.3	39.8
D	41.1	38.7	40.4	37.2	40.3	39.5

Mean D.M. %: 82.9

POTATOES 1ST TEST CROP. TOTAL TUBERS

1965 - 1967

HIGHFIELD

	Lu	LC	LN	AH	Mean	RC	RN	GC	GN	Mean
Mean	18.83	18.50	18.85	19.72	18.98	20.28	20.65	20.64	19.21	20.20
F	18.93	18.79	19.02	18.88	18.90					
D	18.72	18.21	18.69	20.57	19.05					
N0	19.89	19.65	19.72	16.43	18.92	21.93	22.19	20.92	22.73	21.94
N1	20.16	18.90	18.88	20.27	19.55	21.41	21.11	21.46	17.76	20.44
N2	17.72	18.06	18.53	20.91	18.81	19.45	21.65	21.46	19.12	20.42
N3	17.54	17.41	18.28	21.28	18.63	18.32	17.66	18.73	17.24	17.99
P0*	19.00	18.93	18.78	19.87	19.14	20.01	21.22	20.67	18.84	20.18
P1*	18.65	18.07	18.93	19.58	18.81	20.54	20.09	20.62	19.59	20.21
K0*	18.61	18.82	19.10	19.72	19.06	20.17	20.91	20.89	19.19	20.29
K1*	19.04	18.18	18.61	19.72	18.89	20.38	20.39	20.40	19.24	20.10

* In addition to basal

68/B/1.9

POTATOES 1ST TEST CROP. % WARE

1965 - 1967

HIGHFIELD

	Lu	LC	LN	AH	Mean	RC	RN	GC	GN	Mean
Mean	92.8	93.7	92.7	92.1	92.8	92.4	91.9	91.8	92.2	92.1
F	93.0	93.8	93.0	92.2	93.0					
D	92.6	93.6	92.4	91.9	92.6					
N0	92.9	94.0	92.3	88.7	92.0	92.1	92.7	90.9	93.4	92.3
N1	93.3	93.8	92.7	92.6	93.1	92.9	92.4	92.4	92.4	92.5
N2	92.8	93.8	92.9	93.7	93.3	92.4	91.0	92.2	92.4	92.0
N3	92.1	93.2	92.8	93.3	92.9	92.2	91.6	91.6	90.6	91.5
P0*	92.8	93.9	92.8	92.1	92.9	92.4	92.4	92.0	92.6	92.4
P1*	92.8	93.5	92.5	92.0	92.7	92.4	91.3	91.6	91.7	91.8
K0*	92.6	94.1	92.5	92.6	93.0	93.1	91.9	91.9	92.3	92.3
K1*	93.0	93.3	92.8	91.6	92.7	91.7	91.9	91.6	92.1	91.8

* In addition to basal

68/B/1.10

POTATOES 1ST TEST CROP. TOTAL TUBERS

1965 - 1967

FOSTERS

	Lu	LC	LN	AH	Mean	RC	RN	Mean
Mean	18.74	19.44	20.31	18.13	19.15	19.22	20.21	19.71
F	18.98	18.37	19.92	17.21	18.62			
D	18.49	20.50	20.71	19.04	19.69			
N0	18.06	19.36	19.78	14.03	17.81	21.03	22.09	21.56
N1	19.91	19.95	20.82	18.35	19.76	19.53	20.23	19.88
N2	18.60	20.28	20.53	20.03	19.86	18.89	20.33	19.61
N3	18.38	18.16	20.12	20.11	19.19	17.41	18.18	17.80
P0*	18.54	19.49	20.51	18.12	19.16	19.23	20.12	19.68
P1*	18.93	19.39	20.12	18.13	19.14	19.20	20.29	19.75
K0*	18.65	19.50	20.56	18.44	19.29	19.89	20.26	20.08
K1*	18.82	19.37	20.07	17.81	19.02	18.54	20.15	19.35

* In addition to basal

68/B/1.11

POTATOES 1ST TEST CROP. % WARE

1965 - 1967

FOSTERS

	Lu	LC	LN	AH	Mean	RC	RN	Mean
Mean	93.0	94.3	93.3	92.2	93.2	92.5	93.0	92.8
F	93.2	94.6	93.4	91.8	93.3			
D	92.8	94.0	93.2	92.6	93.2			
N0	93.5	94.6	93.4	88.2	92.4	93.5	93.3	93.4
N1	93.1	94.1	93.2	92.8	93.3	93.6	93.7	93.6
N2	93.3	94.9	93.1	93.7	93.7	92.1	93.2	92.6
N3	92.2	93.8	93.6	94.2	93.4	91.0	92.1	91.5
P0*	92.9	93.9	93.2	92.4	93.1	92.1	92.7	92.4
P1*	93.1	94.8	93.5	92.0	93.3	92.9	93.3	93.1
K0*	93.0	94.4	93.6	92.4	93.3	92.2	93.1	92.6
K1*	93.0	94.3	93.0	92.0	93.1	92.9	93.0	92.9

* In addition to basal

68/B/1.12

POTATOES 2ND TEST CROP. TOTAL TUBERS

1964 - 1966

	Lu	LC	LN	AH	Mean
		HIGHFIELD			
Mean	16.68	16.11	16.78	16.16	16.43
		(±0.568)			(±0.284)
F	16.87	15.92	15.96	15.92	16.17
D	16.49	16.31	17.60	16.40	16.70
To wheat 1967					
		(±0.568)*			(±0.284)
N02	15.89	15.81	16.65	15.82	16.04
N13	17.47	16.42	16.91	16.49	16.82
		FOSTERS			
Mean	15.47	14.63	15.66	14.85	15.15
		(±0.426)*			(±0.213)
F	15.19	15.15	15.49	14.19	15.01
D	15.76	14.12	15.83	15.50	15.30
To wheat 1967					
		(±0.426)*			(±0.213)
N02	15.14	14.45	15.79	15.05	15.11
N13	15.81	14.81	15.52	14.64	15.20

* For use in vertical and interaction comparisons

68/B/1.13

POTATOES 2ND TEST CROP. % WARE

1964 - 1966

	Lu	LC	LN	AH	Mean
		HIGHFIELD			
Mean	95.5	95.6	95.2	96.0	95.6
F	95.8	95.8	94.9	96.8	95.8
D	95.2	95.5	95.4	95.3	95.4
To wheat 1967					
N02	95.3	95.8	95.0	96.6	95.7
N13	95.6	95.5	95.3	95.5	95.5
		FOSTERS			
Mean	96.3	96.8	96.7	97.1	96.7
F	96.1	96.8	97.2	97.2	96.9
D	96.4	96.7	96.2	96.9	96.5
To wheat 1967					
N02	96.2	96.4	96.7	97.4	96.7
N13	96.3	97.1	96.7	96.7	96.7

68/B/1.14

BARLEY 3RD TEST CROP

GRAIN

1963 - 1965

	Lu	LC	LN	AH	Mean
		HIGHFIELD			
Mean	40.3	41.9	41.0	38.4	40.4
1968					
N0	37.2	41.2	40.8	34.1	38.3
N1	40.8	42.0	39.6	37.0	39.8
N2	41.5	43.4	41.4	41.1	41.9
N3	41.8	41.0	42.4	41.5	41.7
1967					
F	39.0	41.5	41.0	38.4	40.0
D	41.7	42.3	41.1	38.4	40.9

Excluding AH

1968

1967	N0	N1	N2	N3	Mean
F	38.4	39.8	41.1	42.6	40.5
D	41.0	41.8	43.1	40.9	41.7

Mean D.M. %: 83.2

68/B/1.15

BARLEY 3RD TEST CROP

GRAIN

1963 - 1965

	Lu	LC	LN	AH	Mean
		FOSTERS			
Mean	38.4	37.1	37.8	35.9	37.3
1968					
N0	32.7	34.4	33.3	28.9	32.3
N1	39.0	36.4	38.6	-	-
N2	41.1	40.0	39.4	37.4	39.5
N3	40.7	37.7	39.9	39.1	39.4
N4	-	-	-	38.1	-
1967					
F	37.8	36.9	36.8	35.3	36.7
D	39.0	37.4	38.7	36.4	37.9

Excluding AH

1968

1967	N0	N1	N2	N3	Mean
F	31.7	37.1	39.9	39.9	37.2
D	35.2	38.8	40.5	39.0	38.4

Mean D.M. %: 80.1

68/B/1.16

TREATMENT CROPS ARABLE AND HAY ROTATION

HIGHFIELD			FOSTERS		
AH	R	Mean	AH	R	Mean
		SUGAR BEET			
		ROOTS			
22.62	23.95	23.28	21.99	22.16	22.08
		SUGAR %			
15.3	14.8	15.0	15.8	15.3	15.5
		TOTAL SUGAR			
69.1	70.8	69.9	69.5	67.8	68.6
		TOPS			
17.85	22.05	19.95	18.21	22.69	20.45
		OATS			
		GRAIN			
31.5	37.0	34.2	39.2	40.2	39.7

Mean D.M. %: Oats, grain: Highfield: 82.5
Fosters: 81.4

LUCERNE: DRY MATTER

	HIGHFIELD			FOSTERS		
	F	D	Mean	F	D	Mean
2nd year (4 cuts)	63.9	68.2	66.0	83.5	87.3	85.4
3rd year (3 cuts)	30.1	26.4	28.2	40.5	40.6	40.5

ALL-GRASS LEY: DRY MATTER

	HIGHFIELD			FOSTERS		
	F	D	Mean	F	D	Mean
2nd year (4 cuts)	100.9	99.0	99.9	101.5	100.3	100.9
3rd year (4 cuts)	94.9	97.0	96.0	103.2	109.7	106.4

CLOVER-GRASS LEY: DRY MATTER

	HIGHFIELD			FOSTERS		
	F	D	Mean	F	D	Mean
2nd year (4 cuts)	69.8	72.0	70.9	74.9	77.5	76.2
3rd year (4 cuts)	50.6	53.4	52.0	57.6	57.3	57.5

68/B/1.18

PERMANENT GRASS: DRY MATTER

	GC	GN	Mean
	HIGHFIELD		
18th Exptl year			
Blocks 9 and 12	35.5	95.2	65.4
Blocks 10 and 11	38.8	109.3	74.0
20th Exptl year			
Blocks 1 and 4	41.2	102.6	71.9
Block 2	39.3	107.7	73.5

RESEEDED GRASS: DRY MATTER

HIGHFIELD				FOSTERS			
	RC	RN	Mean		RC	RN	Mean
18th Exptl year Blocks 9 and 12	39.4	97.0	68.2	18th Exptl year Blocks 6 and 11	51.7	85.8	68.8
20th Exptl year Blocks 1 and 4	51.4	99.4	75.4	20th Exptl year Blocks 1 and 3	56.6	100.3	78.5

(GC, RC) Clover-grass management
(GN, RN) All-grass management

LEY AND ARABLE ROTATIONS

(WLA)

Woburn Stackyard 1968 - the 31st year.

For history, treatments etc., see 'Details' 1967 and 'Results' 63/B/4, 64/B/4, 65/B/4, 66/B/4 and 67/B/4.

First test crop: Barley replaced sugar beet and received a basal application of 280 lb (0:20:20) combine drilled.

Corrective K dressings (in cwt K2O) as muriate of potash

	No FYM half plots	FYM half plots
Continuous rotations		
Ley	0	1
Sainfoin	3	3
Arable with hay	5	4
Arable	2	2
Alternating rotations		
Arable with hay/ley	0	0.5
Arable/sainfoin	5	3
Ley/arable with hay	5	3
Lucerne/arable	5	3

Nitrogen test on eighth plots: After arable rotations:
0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' 21.
After ley and sainfoin:
None (N0), 0.4 (N1), 0.8(N2), 1.2 (N3) cwt N as 'Nitro-Chalk' 21.

First treatment crops: All plots received a basal application of 92 lb MgO as Epsom salts.

Potatoes: 1. Fumigant on quarter plots: None (O), 400 lb (F) chloropicrin.
2. Nitrogen on twelfth plots: 1.0 (N1), 1.5 (N2), 2.0 (N3).
3. Fungicide seed dressing on strips of 6 twenty-fourth plots: None (O), thiram (T) (about 15 lb per acre of dust (50% a.i.) applied to tubers before planting).

NOTE: The thiram dressed seed was chitted and the undressed seed was not chitted because of an error.

Cultivations, etc.:

Treatment crops.

Ley 1st year: Ploughed: 18 Sept, 1967. NPK applied: 29 Mar, 1968. Mg applied: 3 Apr. Seed sown at 40 lb: 11 Apr. NK applied: 9 July. Grazed 7 circuits: 17 June - 15 Oct.

Ley 2nd year: NK applied: 26 Mar, 1968, 26 June. Grazed 9 circuits: 28 Apr - 15 Oct.
Ley 3rd year: NK applied: 26 Mar, 1968, 17 June. Grazed 10 circuits: 19 Apr - 23 Oct.

Sainfoin 1st year: Ploughed: 18 Sept, 1967. N and K applied: 28 Mar, 1968. P applied: 29 Mar. Mg applied: 3 Apr. Seed drilled at 70 lb: 11 Apr. Cut once: 6 Aug.
Sainfoin 2nd year: N and K applied: 26 Mar, 1968. First cut: 6 June. Sprayed with paraquat at 0.38 lb ion in 30 gals: 10 June. Second cut: 12 Aug. Sprayed with paraquat at 0.38 lb ion in 30 gals: 14 Aug.
Sainfoin 3rd year: N and K applied: 26 Mar, 1968. First cut: 6 June. Sprayed with paraquat at 0.38 lb ion in 30 gals: 10 June. Rotary cultivated to kill having failed after first cut: 19 July. Sprayed with paraquat at 0.38 lb ion in 30 gals: Aug 14,

Potatoes: Ploughed: 18 Sept, 1967. Fumigant applied: 10 Nov. Mg applied: 3 Apr, 1968. PK applied: 4 Apr. Test nitrogen applied: 8 Apr. Rotary cultivated, potatoes planted: 10 Apr. Sprayed with linuron at 0.5 lb plus paraquat at 0.38 lb in 50 gals: 3 May. Grubbed: 1 June. Ridged: 14 June. Sprayed with mancozeb at 1.2 lb plus demeton-s-methyl at 3.5 oz in 38 gals: 12 July. Sprayed with mancozeb at 1.2 lb in 38 gals: 30 July, 6 Aug. Sprayed with undiluted BOV at 15 gals: 4 Sept. Lifted: 2 Oct.
Rye: Ploughed: 18 Sept, 1967. Seed combine drilled at 150 lb: 13 Oct. Seeds undersown (AH plots): 29 Mar, 1968. 'Nitro-Chalk' applied: 8 Apr. Combine harvested: 23 Aug.
Seeds hay: Seeds undersown in rye at 30 lb: 24 Apr, 1967. NPK applied: 26 Mar, 1968. NK applied: 18 June. Cut twice: 6 June, 12 Aug.
Carrots: Ploughed: 12 Oct, 1967. NPK applied: 5 Apr, 1968. Seed drilled at 3.5 lb: 11 Apr. Sprayed with linuron at 0.5 lb in 50 gals: 28 May. Sprayed with DDT at 0.5 pints in 20 gals: 30 May. Sprayed with menazon at 0.25 lb in 50 gals: 18 June. Lifted: 12 - 13 Nov.

Test crops.
Barley, 1st test crop: Half corrective K applied: 25 Oct, 1967. Ploughed: 13 Nov. Remaining corrective K applied: 13 Feb, 1968. Seed combine drilled at 140 lb: 6 Mar. Test 'Nitro-Chalk'

applied: 14 Mar. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 25 gals): 26 Apr. Combine harvested: 21 Aug.

Barley, 2nd test crop: Magnesian limestone applied at 45 cwt. Ploughed: 17 Nov, 1967. Seed combine drilled at 140 lb: 9 Mar, 1968. 'Nitro-Chalk' applied: 11 Mar. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 25 gals): 26 Apr. Combine harvested: 20 Aug.

Standard errors per plot.

Barley, 2nd test crop, grain:

Whole plot: 1.86 or 6.4% (4 d.f.)

Sub plot: 1.32 or 4.5% (4 d.f.)

SUMMARY OF RESULTS

TREATMENT CROPS

SAINFOIN, DRY MATTER

	1st cut	2nd cut	Total
	1ST YEAR		
DO	22.8		
D1	20.0		
LU*	22.6		
AH	20.2		
Mean	21.4		
Mean D.M. %:	15.3		
	2ND YEAR		
DO	45.3	16.8	62.1
D1	46.0	14.7	60.7
LU	42.6	13.7	56.3
AR	48.7	17.8	66.5
Mean	45.6	15.8	61.4
Mean D.M. %:	14.0	25.8	19.9
	3RD YEAR		
DO	46.8		
D1	44.8		
LU	44.6		
AH	46.9		
Mean	45.8		
Mean D.M. %:	14.0		

* Lucerne 1963 - 64, sainfoin 1965.

68/B/2.5

TREATMENT CROPS

POTATOES

	LE	LU**	AH	AR	Mean
		TOTAL TUBERS			
D0	19.76	20.16	12.97	14.83	16.93
D1*	19.05	19.99	14.74	15.55	17.33
O	17.78	18.12	8.53	9.05	13.37
F	21.02	22.02	19.18	21.33	20.89
N2	18.87	18.60	13.64	15.20	16.58
N3	18.98	20.99	14.40	15.46	17.46
N4	20.35	20.63	13.53	14.90	17.35
O	19.10	20.75	14.33	14.13	17.08
T	19.70	19.40	13.37	16.25	17.18
Mean	19.40	20.07	13.85	15.19	17.13
		% WARE			
D0	96.8	97.0	95.8	95.3	96.2
D1*	96.4	96.8	96.8	96.0	96.5
O	96.7	97.2	95.0	94.2	95.8
F	96.6	96.6	97.6	97.1	97.0
N2	96.6	96.5	96.0	95.7	96.2
N3	96.4	96.8	96.4	95.8	96.4
N4	96.9	97.3	96.4	95.6	96.5
O	96.7	97.2	96.7	95.0	96.4
T	96.6	96.6	95.8	96.3	96.3
Mean	96.6	96.9	96.3	95.7	96.4

68/B/2.6

TREATMENT CROPS

RYE

	GRAIN
DO	29.7
D1*	33.0
Ley	32.2
LU**	26.9
AH	36.0
AR	30.4
Mean	31.4

HAY

DRY MATTER

	1st cut	2nd cut	Total
1964			
DO	64.1	37.7	101.8
D1*	63.4	39.1	102.5
AH	64.3	37.8	102.1
LU	63.2	39.0	102.2
Mean	63.7	38.4	102.1

Mean D.M. %: Rye, Grain: 84.1

* FYM applied: Potatoes - for test crop sugar beet in 1966
Rye - for test crop sugar beet in 1965
Hay - for test crop sugar beet in 1963

** Lucerne 1963 - 64, sainfoin 1965.

68/B/2.7

CARROTS

	ROOTS	TOPS
1964		
D0	33.97	4.69
D1*	34.57	5.04
AR	34.06	4.09
Ley	34.48	5.64
Mean	34.27	4.86

* FYM applied for test crop sugar beet in 1964

68/B/2.8

1ST TEST CROP

BARLEY

GRAIN

	N0	N1	N2	N3	N4
D0 Ley	31.7	28.0	25.8	23.1	-
SA	30.7	30.1	28.0	23.0	-
AH	-	31.5	27.3	22.9	24.2
AR	-	32.9	31.0	30.0	23.1
D1 Ley	34.4	29.1	20.8	22.8	-
SA	32.7	27.1	26.6	23.1	-
AH	-	32.0	27.6	22.7	23.9
AR	-	33.7	31.5	27.9	23.1

	Ley	SA	AH	AR	Mean
CON	26.4	28.0	26.8	29.4	27.7
ALT	27.5	27.4	26.2	28.9	27.5
Mean	27.0	27.7	26.5	29.2	27.6

Mean D.M. %: 80.4

68/B/2.9

1ST TEST CROP

BARLEY

STRAW

	N0	N1	N2	N3	N4
D0 Ley	37.5	36.5	31.5	38.5	-
SA	39.1	37.6	43.0	30.4	-
AH	-	33.0	36.6	38.2	31.5
AR	-	30.9	39.4	39.5	35.7
D1 Ley	30.8	39.7	42.0	25.0	-
SA	31.5	36.0	36.8	32.7	-
AH	-	40.5	40.5	27.4	31.4
AR	-	32.3	43.7	38.4	28.4

	Ley	SA	AH	AR	Mean
CON	36.1	36.4	35.1	34.9	35.6
ALT	34.2	35.4	34.7	37.2	35.4
Mean	35.2	35.9	34.9	36.0	35.5

Mean D.M. %: 79.5

68/B/2.10

2ND TEST CROP

BARLEY

GRAIN

	Ley	SA	AH	AR	Mean
		(1) and (2)			(±0.47)
1967					
D0	29.1	28.8	31.1	30.4	29.9
D1	27.9	27.7	30.3	27.7	28.4
Mean (±1.32)	28.5	28.3	30.7	29.0	29.1

Mean D.M. %: 79.2

(1) (±1.47) For use in horizontal and diagonal comparisons only
(2) (±0.93) For use in vertical and interaction comparisons only

68/B/3.1

REFERENCE PLOTS

ROTHAMSTED (R) GREAT FIELD IV AND HIGHFIELD IX

AND

WOBURN (W) STACKYARD SERIES C, 1968

(ERA, ERG, WERA and WERF)

For details of previous years' results and for rates of fertilisers, etc., see 'Results' 58/Bc/1, 59/Bc/1, 60/B/3, 61/B/2, 62/B/2, 63/B/2, 64/B/2, 65/B/2, 66/B/2 and 67/B/2. For conifer seedbeds and transplants see 63/B/2, 64/B/2, 65/B/2, 66/B/2, 67/B/2.

Great Field IV (R): A test of none v 44 lb Mg as magnesium sulphate is applied to half plots on potatoes (excluding additional plots).

Stackyard Series C (W): The test of manganese sulphate and magnesium sulphate to oats is discontinued. A test of none v 44 lb Mg as magnesium sulphate is applied to half plots on potatoes and sugar beet. Balancing dressings are applied to untreated half plots after harvest. The variety of oats is now Pendrwm.

Conifer seedbeds and transplants. Bed 2. Grand Fir (Abies grandis) replaced Norway Spruce (Picea abies) in both the transplants and seedbeds.

Cultivations, etc.:-

Great Field IV (R):-

Winter wheat: Plots dug by hand, P, K, Mg, Ca and S applied: 27 Sept, 1967. Seed drilled: 6 Oct. First N dressing applied (excluding additional plots): 1 Mar, 1968. Second N dressing applied, all N applied to additional plots: 24 Apr. Trace element spray applied: 26 Apr. Harvested: 29 Aug.

Kale: FYM applied, plots dug by hand: 13 Nov, 1967. P, K, Mg, Ca and S applied: 23 Feb, 1968. Plots rotary cultivated, seed drilled, first N dressing applied to additional plots: 27 Mar. N applied (excluding additional plots): 24 Apr. Second N dressing applied to additional plots: 23 May. Sprayed with dimethoate at 4 oz in 50 gals: 31 May. Trace element spray applied: 11 June. Sprayed with malathion, dimethoate and DDT (Pestex at 10 fluid oz in 50 gals): 11 July. Harvested: 18 Oct.

Barley: Dug by hand: 10 Nov, 1967. P, K, Ca, Mg and S applied: 23 Feb, 1968. Plots rotary cultivated, seed drilled: 8 Mar. N applied: 4 Apr. Trace element spray applied: 14 May. Harvested: 21 Aug.

Grass-clover ley: Undersown in barley: 14 Apr, 1967. P, K, Ca, Mg and S applied: 23 Feb, 1968. N applied: 1 Mar. Trace element spray applied: 18 Apr. Cut four times: 23 Oct, 1967, 31 May, 1968, 19 July, 3 Oct.

Potatoes: FYM applied, plots dug by hand: 15 Nov, 1967. P, K, Ca, Mg and S applied: 23 Feb, 1968. First N dressings applied to additional plots, all N applied to remaining plots, plots rotary cultivated, Mg applied to half plots, potatoes planted: 27 Mar. Second N dressing applied to additional plots: 23 May. Earthed up: 24 May. Sprayed with dimethoate at 4 oz in 50 gals: 31 May. Trace element spray applied: 11 June. Sprayed with malathion, dimethoate and DDT (Pestex at 10 fluid oz in 50 gals): 11 July. Sprayed twice with dimethoate, fentin acetate and maneb (Rogor 20W at 1.5 lb and Fennite at 1.5 lb in 80 gals): 15 July and 12 Aug. Lifted: Plots of main experiment with neither K nor FYM and no fertiliser plots of additional plots: 30 Aug, remainder: 24 Sept.

Permanent grass: FYM, P and K applied: 23 Feb, 1968. N applied, first dressing: 1 Mar, second: 20 May, third: 19 July. Cut three times: 20 May, 19 July, 3 Oct.

NOTES: (1) Yields of dry matter were obtained for each crop.
(2) The percentages of N, P and K, and on additional plots of N, P, K, Mg, Ca and S, were measured for each crop.
(3) The percentage of Mg was measured in potato tubers on the main experiment.

Stackyard Series C (W):-

Winter oats: Plots dug by hand: 20 Sept, 1967. P and K applied: 28 Sept. Seed drilled: 18 Oct. First N dressing applied: 12 Mar, 1968. Second N dressing applied: 30 Apr. Sprayed with ioxynil at 9 oz and mecoprop at 27 oz in 50 gals: 3 May. Harvested: 12 Aug.

Sugar beet: Balancing Mg applied to half plots: 5 Oct, 1967. FYM applied, plots dug by hand: 4 Dec. P and K applied: 22 Mar, 1968. First N dressing applied, plots rotary cultivated, Mg applied to half plots, seed drilled: 26 Mar. Singled, second N dressing applied: 5 June. Sprayed twice with malathion, dimethoate and DDT (Pestex at 10 fluid oz in 50 gals): 12 June and 3 July. Sprayed with dimethoate (Rogor 20W at 1.5 lb in 50 gals): 18 July. Harvested: 10 Oct.

Barley: Plots dug by hand: 5 Dec, 1967. P and K and first N dressing applied, plots rotary cultivated, seed drilled: 12 Mar, 1968. Second N dressing applied: 30 Apr. Harvested: 21 Aug.

Grass-clover ley: Undersown in barley: 16 Mar, 1967. N, P and K applied: 12 Mar, 1968. Cut four times: 18 Oct, 1967, 28 May, 1968, 18 July, 10 Oct.

Potatoes: FYM applied: 4 Dec, 1967. Plots dug by hand: 5 Dec. P and K applied: 22 Mar, 1968. First N dressing applied, plots rotary cultivated, potatoes planted, Mg applied to half plots: 28 Mar. Second N dressing applied, plots earthed up: 5 June. Sprayed with malathion, dimethoate and DDT (Pestex at 10 fluid oz in 50 gals): 12 June. Sprayed twice with dimethoate, fentin acetate and maneb (Rogor 20W at 1.5 lb and Fennite at 1 lb in 50 gals): 18 July and 12 Aug. Lifted plots with neither K nor FYM: 10 Sept, remainder: 23 Sept.

Permanent grass: FYM, first N dressing and P and K applied: 12 Mar, 1968. Second N dressing applied: 28 May. Third N dressing applied: 23 July. Cut three times: 28 May, 18 July, 10 Oct.

NOTES: (1) Samples were taken for determination of dry matter for each crop, and the percentage of N, P and K.
(2) The percentage of Mg in the leaves of sugar beet and in potato tubers was determined.
(3) Surface soil samples were taken from each block for a determination of soil pH.

Grazed Reference Plots (Highfield IX (R)):-

Cultivations, etc.: P and K fertilisers applied, ground chalk applied to appropriate plots: 6 Dec, 1967. First N dressings applied: 13 Mar, 1968. Sample cuts taken four times: 6 May, 27 June from 2 blocks, 1 July from remaining 2 blocks, 3 Sept, 28 Oct. Sampling cages moved after each cut. N dressing applied after each cut except the last.

NOTES: (1) The percentages of N, P and K in the dry grass were measured.
(2) Visual estimates were made of the percentage surface area covered by clover leaves.

Conifer seedbeds and transplants:

Bed 1: Formalin (250 ml. in 4 l. water per sq. yd.) applied: 18 Jan, 1968. All manures (other than N) dug in: 19 Mar. Seed sown: 28 - 29 Mar. T.V.O. pre-emergence spray: 22 Apr. N top dressed: 14 June, 12 July, 2 Aug, 13 Sept.

Bed 2: Seedbeds as for Bed 1. Transplants plots lined out: 28 - 29 Mar, 1968. All manures (other than N) as for seedbeds. N top dressed on transplants: 6 May, 14 June, 12 July, 2 Aug.

NOTES: (1) Height assessments and samples for analyses as in 1967.
(2) Plots lacking N, P, K and Mg had typical deficiency symptoms.

Standard errors per plot.

Highfield IX (R), Grass Dry matter:

1st cut:	3.51 or 20.3% (39 d.f.)
2nd cut:	4.14 or 9.8% (39 d.f.)
3rd cut:	3.81 or 10.8% (39 d.f.)
4th cut:	3.64 or 17.4% (39 d.f.)
Total of 4 cuts:	8.25 or 7.1% (39 d.f.)

Stackyard Series (C) W, Sitka Spruce Bed 1:

Mean height:	0.189 or 8.8% (11 d.f.)
Plant number:	92.7 or 10.6% (11 d.f.)

NOTE: In 1968 (and previous years) the sub plot tests of Mg and Mn are ignored in the tables. The figures presented are means over sub plot treatment.

68/B/3.5

SUMMARY OF RESULTS

GREAT FIELD IV (R): ORIGINAL PLOTS

Treatment	WINTER WHEAT: GRAIN	WINTER WHEAT: STRAW	KALE: TOTAL WEIGHT	BARLEY: GRAIN	BARLEY: STRAW	LEY: DRY MATTER 1st cut	LEY: DRY MATTER 2nd cut	LEY: DRY MATTER 3rd cut	LEY: DRY MATTER 4th cut	LEY: DRY MATTER Total of 4 cuts	POTATOES: TOTAL TUBERS	PERMANENT GRASS: DRY MATTER 1st cut	PERMANENT GRASS: DRY MATTER 2nd cut	PERMANENT GRASS: DRY MATTER 3rd cut	PERMANENT GRASS: DRY MATTER Total of 3 cuts
None	23.8	31.5	9.38	20.9	17.3	0.7	16.3	7.3	4.4	28.7	4.24	8.3	15.6	14.5	38.4
N1	22.2	33.2	10.07	17.6	15.8	0.6	30.3	10.9	6.9	48.7	3.46	12.2	14.3	21.6	48.1
P	16.0	26.7	14.41	23.8	18.1	2.3	28.5	17.3	7.8	55.9	3.03	8.0	12.4	16.0	36.4
N1P	12.4	23.5	20.84	18.0	15.8	1.8	30.6	9.3	6.2	47.9	3.22	15.9	16.7	23.9	56.5
K	30.2	40.5	12.16	18.0	14.8	5.4	30.6	22.0	9.5	67.5	15.20	9.6	13.6	21.1	44.3
N1K	34.2	54.8	11.46	27.8	24.6	7.0	40.2	23.3	11.3	81.8	16.73	22.7	21.7	24.0	68.4
PK	33.6	48.7	12.50	25.5	19.3	7.9	39.8	23.3	10.7	81.7	16.88	12.9	18.6	19.9	51.4
N1PK	38.7	54.4	24.14	43.4	38.7	4.6	38.8	16.3	10.0	69.7	19.25	22.2	21.6	26.7	70.5
N2PK	42.2	65.4	31.42	42.8	45.9	4.2	50.6	13.8	14.4	83.0	23.39	35.6	24.4	21.0	81.0
D	38.7	53.6	20.32	29.8	22.8	9.2	38.8	31.1	16.1	95.2	23.73	28.7	19.6	27.5	75.8
N1PKD	44.7	69.8	34.20	42.2	42.1	3.6	45.0	18.9	15.7	83.2	26.87	40.1	24.0	31.4	95.5
N2PKD	41.5	72.6	39.58	43.5	54.0	2.3	52.0	18.0	14.7	87.0	31.04	45.3	26.1	27.2	98.6
Mean D.M. %:	83.1	77.2		83.3	76.6	19.3	20.8	20.9	19.4	20.1		23.2	24.8	21.7	23.2

68/B/3.6

GREAT FIELD IV (R): ADDITIONAL PLOTS

Treatment	WINTER WHEAT: GRAIN	WINTER WHEAT: STRAW	KALE: TOTAL WEIGHT	BARLEY: GRAIN	BARLEY: STRAW	LEY: DRY MATTER 1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts	POTATOES: TOTAL TUBERS
None	30.2	39.5	9.72	15.2	11.3	2.2	22.2	9.2	6.4	40.0	6.01
N2PK	49.6	73.4	37.33	43.3	40.1	6.2	52.8	16.3	17.4	92.7	22.54
N2 PK Mg Ca	45.2	69.5	36.46	44.9	45.3	7.6	44.2	20.7	15.9	88.4	18.84
N2 PK Mg S	50.6	65.4	36.46	46.6	47.1	6.3	48.2	17.3	18.6	90.4	17.50
N2 PK Ca S	49.6	71.2	28.82	45.6	45.4	4.7	53.6	20.4	18.1	96.8	19.29
N2 PK Mg Ca S	46.4	72.4	36.12	46.7	47.8	8.8	48.0	19.2	17.4	93.4	18.60
N2 PK Mg Ca S TE	48.7	67.4	37.16	48.9	43.8	6.3	48.4	18.6	16.3	89.6	20.10
Mean D.M. %:	83.8	81.4		84.1	82.2	17.0	22.3	21.6	18.4	19.8	

68/B/3.7

STACKYARD SERIES C (W)

Treatment	OATS GRAIN	OATS STRAW	SUGAR BEET ROOTS	SUGAR BEET SUGAR %	SUGAR BEET TOTAL SUGAR	BARLEY GRAIN	BARLEY STRAW
None	17.5	15.8	4.78	14.2	13.6	11.9	12.1
N1	34.5	35.3	6.33	13.3	16.8	26.6	29.2
P	16.7	15.5	5.56	13.7	15.2	14.8	13.1
N1P	35.6	35.4	6.18	13.4	16.6	23.4	26.4
K	16.2	15.6	8.49	15.5	26.3	13.5	11.6
N1K	34.0	43.4	11.88	15.7	37.3	26.5	30.8
PK	16.8	16.6	8.64	15.5	26.8	13.3	11.5
N1PK	30.2	47.8	12.50	15.3	38.2	27.4	32.2
N2PK	38.7	59.6	13.43	14.8	39.8	28.4	44.6
D	21.6	18.6	14.66	15.8	46.3	20.7	18.8
N1PKD	34.5	50.1	14.82	15.4	45.6	25.4	40.6
N2PKD	34.2	72.2	19.91	15.4	61.3	26.5	37.6
Mean D.M. %:	78.1	53.2				82.2	68.5

68/B/3.8

STACKYARD SERIES C (W)

Treatment	LEY: DRY MATTER 1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts	POTATOES TOTAL TUBERS	PERMANENT GRASS: DRY MATTER 1st cut	2nd cut	3rd cut	Total of 3 cuts
None	3.3	14.6	15.6	10.5	44.0	4.16	14.9	7.7	13.0	35.6
N1	2.4	27.4	13.5	9.2	52.5	4.07	20.8	15.6	20.8	57.2
P	3.4	15.1	13.2	10.1	41.8	3.82	14.2	8.3	12.6	35.1
N1P	3.8	27.6	12.0	7.9	51.3	4.10	21.4	16.1	19.7	57.2
K	10.9	21.3	26.9	15.2	74.3	5.10	18.6	9.0	13.7	41.3
N1K	8.5	30.6	25.6	14.1	78.8	9.80	31.2	18.6	27.5	77.3
PK	12.0	14.7	23.3	16.6	66.6	7.96	21.1	9.9	14.3	45.3
N1PK	9.8	34.6	23.4	16.8	84.6	10.68	32.2	19.6	25.0	76.8
N2PK	6.3	43.2	15.7	14.9	80.1	15.31	36.2	21.1	28.4	85.7
D	10.9	19.9	23.5	15.5	69.8	16.20	29.7	9.9	16.6	56.2
N1PKD	10.1	38.2	24.5	15.9	88.7	22.73	38.8	17.8	30.8	87.4
N2PKD	7.4	45.8	21.2	15.4	89.8	27.76	45.7	25.5	33.0	104.2
Mean D.M. %:	17.5	19.4	22.5	19.1	19.6		19.0	24.1	20.9	21.3

STACKYARD C (W). Bed 1

SITKA SPRUCE

Treatment	MEAN HEIGHT: INCHES	PLANT NUMBER: PER SQ YARD
	(±0.134)	(±65.5)
None	1.68 (1)	890 (2)
PK Mg	1.34	870
NK Mg	1.43	867
NP Mg	1.81	927
NPK	1.82	828
NPK Mg	2.53 (1)	807 (2)
NPK Mg F	2.99	825
C	2.24	858
C NPK Mg	2.99	1008
L NPK Mg	2.73	951
Mean	2.15	877

(1) (±0.094) (2) (±46.4)

Bed 2 plots 1 - 6 (Transplant)

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	8.59	14.43	15.13	12.71
GF	6.55	7.66	8.93	7.72

68/B/3.10

Bed 2 Plots 7 - 12 Seed bed

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	1.10	2.63	2.78	2.17
GF	1.11	1.71	1.77	1.53
	PLANT NUMBERS: PER SQ YD			
SS	954	948	1146	1016
GF	588	690	726	668

68/B/3.11

HIGHFIELD IX (R)

GRASS: DRY MATTER

	1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts
PK	(±1.75)	(±2.07)	(±1.90)	(±1.82)	(±4.12)
N0 00	8.5	30.5	32.8	17.9	89.7
N1 00	13.7	40.3	36.7	20.8	111.5
A1 00	14.4	44.0	34.1	21.8	114.4
N0 10	11.5	33.5	31.5	18.4	95.0
N1 10	17.5	42.1	36.1	26.1	121.7
A1 10	22.7	44.2	34.1	23.3	124.3
N0 01	10.4	33.9	31.1	13.4	88.8
N1 01	20.3	46.3	35.0	20.1	121.7
A1 01	21.5	46.0	32.2	25.6	125.3
N0 11	8.2	33.0	35.3	16.7	93.3
N1 11	25.9	47.6	37.1	21.5	132.1
A1 11	24.1	46.4	39.1	23.9	133.4
N2 11	21.5	50.6	36.5	20.8	129.3
A2 11	21.9	52.7	40.0	22.4	136.9
Mean	17.3	42.2	35.1	20.9	115.5

Mean D.M. %: 1st cut: 17.4
2nd cut: 18.1
3rd cut: 16.8
4th cut: 13.6
Total of 4 cuts: 16.5

68/B/4.1

WOBURN MARKET GARDEN

(WMG)

Residues of organic manures, P and K on spring beans - Lansome I 1968.

For history (treatments) etc. see 'Details 1967' and 'Results' 63/B/5, 64/B/5, 65/B/5, 66/B/5 and 67/B/5.

Area of each plot: 0.0109. Area harvested: 0.0041.

Treatment symbols: (No manures applied 1968).

Farmyard manure:	10 (D1), 20 (D2) tons.
Sewage sludge:	10 (S1), 20 (S2) tons.
Sewage sludge/ straw compost:	10 (T1), 20 (T2) tons.
Vegetable compost:	10 (C1), 20 (C2) tons.
Peat:	12.5 (PT) tons.
PK fertiliser:	None (P0K0), 1.5 cwt P2O5, 1.5 cwt K2O until 1967 (P1K1). 1.5 cwt P2O5, 3.0 cwt K2O until 1964 on Series B and 1965 on Series A, then 3.0 cwt P2O5, 3.0 cwt K2O on both until 1967 (P2K2).

Basal applications: Manures: None. Weedkiller: Simazine at 0.75 lb in 33 gals. Insecticide: Demeton-s-methyl at 3.5 oz in 37 gals.

Cultivations, etc.: Ploughed: 25 Nov, 1967. Seed drilled at 200 lb: 28 Feb, 1968. Weedkiller applied: 1 Mar. Insecticide applied: 17 June. Series B combine harvested: 20 Sept, Series A: 23 Sept. Variety: Tarvin.

68/B/4.2

SUMMARY OF RESULTS

GRAIN

SERIES A

Organic 1942-61*	1963-67	P0K0	P1K1	P2K2	Mean
O	O		35.1	32.2	33.6
S1	O		34.3**		
S2	O		35.7**		
T1	O		35.2**		
T2	O		35.1**		
D1	D1	34.0	32.5		33.3
D2	D2	34.9	32.6		33.7
C1	D1	33.2	36.0		34.6
C2	D2	32.1	35.5		33.8

General mean: 34.3
Mean D.M. %: 74.9

* Last applied to leeks 1961/62
** P1K1 until 1965

68/B/4.3

GRAIN

SERIES B

Organic 1942-62	1963-64	1966-67	P0K0	P1K1	P2K2	Mean
0	0	0		29.0	30.8	29.9
0	0	PT		30.1	29.1	29.6
S1	0	0	31.7*			
S2	0	0	32.3*			
T1	0	0	32.3*			
T2	0	0	33.2*			
D1	D1	D1	28.9	31.0		
D1	D1	0	34.2	30.6		
D2	D2	D2	30.7	30.6		
D2	D2	0	29.8	28.3		
C1	D1	D1	29.9	31.6		
C2	D2	D2	27.5	29.2		

General mean: 30.9
Mean D.M. %: 69.7

* P1K1 until 1964

68/B/5.1

RESIDUAL PHOSPHATE ROTATION

(RP)

The long term and residual effects of phosphate fertilisers - Great Field IV and Sawyers I, the 9th year. For treatments and previous years' results see 'Details' 1967 and 'Results' 67/B/6.

Area of each plot:
Great Field IV: 0.0193. Area harvested: Potatoes and barley - 0.0129, swedes - 0.0096.
Sawyers I: 0.0212. Area harvested: Potatoes and barley - 0.0141, swedes - 0.0106.

The basal nitrogen for barley is now 0.8 cwt N on Sawyers and 0.4 cwt N on Great Field IV, applied as 'Nitro-Chalk'.

Cultivations, etc. (both fields):- Ploughed: 20 Nov, 1967.
Potatoes: Fertilisers applied: 28 Mar, 1968. Plots rotary cultivated, potatoes planted: 28 Mar. Sprayed with paraquat at 0.38 lb ion and linuron at 0.75 lb in 36 gals: 3 May. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: 3 July, 19 July, 5 Aug. The spraying on 19 July included demeton-s-methyl at 3.5 oz. Sprayed with undiluted BOV at 15 gals: 30 Aug. Lifted: 2 Oct.
Barley: Fertilisers applied, seed drilled at 140 lb: 29 Feb, 1968. Combine harvested: 20 Aug.
Swedes: Fertilisers applied: 21 May, 1968. Seed drilled at 1.25 lb: 22 May. Singled: 26 June - 10 July. Lifted: 19 Nov.

Standard errors per plot.
Sawyers I:
Potatoes: 0.899 or 7.0% (11 d.f.)
Barley: 2.29 or 7.5% (11 d.f.)
Swedes: 1.586 or 12.9% (11 d.f.)

68/B/5.2

SUMMARY OF RESULTS

POTATOES

Treat -ment	TOTAL TUBERS Great Field IV Mean	TOTAL TUBERS Sawyers I Mean	PERCENTAGE WARE Great Field IV Mean	PERCENTAGE WARE Sawyers I Mean
		(±0.636)		
0	11.87	12.27	97.8	97.7
A1	12.91	13.30	97.2	97.8
A2	12.32	13.48	96.2	97.3
A3	13.41	14.46	97.5	96.7
A4	14.25	14.89	96.1	97.2
T1	10.26	9.97	95.4	96.5
T2	13.16	12.20	97.3	98.2
R2	12.12	12.90	96.7	97.5
R3	13.89	13.79	97.0	97.0
R4	15.23	14.81	97.4	97.0
G1	11.42	10.79	96.6	96.6
S1	12.39	11.76	96.6	97.8
Mean	12.77	12.88	96.8	97.3

BARLEY

	GRAIN		STRAW	
		(±1.62)		
0	25.4	27.6	31.4	35.3
A1	26.1	31.7	33.0	40.8
A2	25.8	33.5	33.6	50.1
A3	23.1	30.8	43.0	48.4
A4	24.9	31.0	32.5	45.0
T1	25.6	32.0	29.3	37.0
T2	26.8	31.4	32.1	38.2
R2	22.2	27.4	39.8	48.0
R3	26.6	33.4	44.8	44.4
R4	22.4	25.1	59.5	45.0
G1	27.6	32.2	27.5	37.2
S1	25.3	29.8	30.1	39.0
Mean	25.2	30.5	36.4	42.4
Mean D.M. %:	82.0	82.4	86.1	91.7

68/B/5.3

SWEDES, ROOTS

Treat -ment	Great Field IV Mean	Sawyers I Mean
		(±1.122)
0	8.20	3.05
A1	20.09	13.20
A2	21.30	15.15
A3	23.71	15.81
A4	19.77	15.36
T1	14.31	7.32
T2	18.34	10.57
R2	21.21	14.06
R3	22.04	17.76
R4	22.83	17.47
G1	15.37	7.93
S1	11.71	9.70
Mean	18.24	12.28

68/B/6.1

CULTIVATION - WEEDKILLER ROTATION

(CW)

Great Harpenden I 1968 - the 8th year

A comparison of weed-control by various cultivation methods and by pre-emergence weedkillers.

For previous history, rotations, treatments etc., see 'Results' 61/B/10, 62/B/10, 63/B/10, 64/B/9, 65/B/8, 66/B/7 and 'Details' 1967.

A comparison is now made of none v paraquat (G) applied to stubbles after beans, wheat and barley. This is made on half-plots, in all combinations with the test of O v H (post-emergence weedkiller to wheat and barley). The interaction (O v G) x (O v H) is confounded with blocks. Both tests are cumulative, except that in certain years H has been applied to all sub-plots. The first application of paraquat was in autumn 1967, at 0.75 lb ion in 32 gals.

NOTE: As in 1967 A and B plots after potatoes before barley received spring-tine cultivation and no other cultivations.

Area harvested: Beans - 0.0121, wheat, potatoes and barley - 0.0107.

Basal dressing to winter wheat: 2.5 cwt (6:15:15) combine drilled and 3 cwt 'Nitro-Chalk' in spring. All other crops as 1967.

Ground chalk: Spring beans - 23 cwt, winter wheat and potatoes - 46 cwt, barley - 92 cwt.

Cultivations, etc.:-

Spring beans: Paraquat applied to G sub-plots: 12 Oct, 1967. Ground chalk applied: 23 Nov. T plots deep-tine cultivated twice and B plots once: 24 Nov. P and C plots ploughed: 27 Nov. R plots rotary cultivated, depth 6 ins: 6 Dec. P,R,T, B and C plots spring-tine cultivated: 1 Mar, 1968. P,R, T and C plots spring-tine cultivated: 4 Mar. A plots rotary cultivated, seed drilled at 200 lb: 5 Mar. S plots sprayed: 8 Mar. M and C plots tractor-hoed three times: 26 Apr, 20 May and 31 May. Combine harvested: 11 Sept. Variety: Maris Bead.

Winter wheat: Paraquat applied to G sub-plots: 12 Oct, 1967. Ground chalk applied: 23 Nov. T plots deep-tine cultivated twice: 24 Nov. P, C and A plots ploughed: 27 Nov. P,T,A, B and C plots spring-tine cultivated twice, R plots rotary

cultivated, seed drilled at 190 lb: 5 Dec. All plots harrowed: 25 Mar, 1968. 'Nitro-Chalk' applied: 12 Apr. H sub-plots and B plots sprayed with mecoprop at 42 oz and 2,4-D at 10.5 oz in 33 gals: 4 May. Combine harvested: 25 Aug. Variety: Cappelle.

Potatoes: Paraquat applied to G sub-plots: 12 Oct, 1967. Ground chalk applied: 23 Nov. T plots deep-tine cultivated twice: 24 Nov. P and C plots ploughed: 27 Nov. R plots rotary cultivated, depth 6 ins: 5 Dec. Basal compound fertiliser applied: 13 Mar, 1968. T plots deep-tine cultivated, P,C and R plots spring-tine cultivated (R plots in error), R plots rotary cultivated, P,C and T plots spring-tine cultivated. A and B plots rotary cultivated, potatoes machine planted: 29 Mar. M and C plots chain harrowed: 26 Apr. S plots sprayed: 3 May. M and C plots grubbed: 20 May, mechanically weeded: 24 May, rotary ridged: 28 May. M, C and Y plots grubbed: 7 June. M, C and Y plots rotary ridged: 12 June. All plots sprayed 3 times with mancozeb at 1.2 lb in 37 gals (the second time including demeton-s-methyl at 3.5 oz): 4 July, 19 July, 5 Aug. Sprayed with undiluted BOV at 15 gals: 30 Aug. Haulm destroyed mechanically 13 Sept. Lifted: 1 Oct.

Barley: All plots spring-tine cultivated twice and sprayed twice with sodium trichloroacetate at 18 lb in 32 gals: 28 Sept and 25 Oct, 1967. All plots spring-tine cultivated: 17 Nov. T plots deep-tine cultivated twice: 24 Nov. Ground chalk applied: 7 Dec. P and C plots ploughed, R plots rotary cultivated, depth 4 - 5 ins: 20 Dec. All plots spring-tine cultivated, seed drilled at 140 lb: 1 Mar, 1968. All plots rolled: 13 Mar. H sub-plots and B plots sprayed with mecoprop at 36 oz and 2,4-D at 9 oz in 33 gals: 4 May. Combine harvested: 21 Aug.

Standard errors per plot.

Spring beans:	Grain,	whole plot:	1.43 or 6.9% (8 d.f.)
		sub plot:	0.91 or 4.4% (8 d.f.)
Winter wheat:	Grain,	whole plot:	2.40 or 6.5% (8 d.f.)
		sub plot:	1.65 or 4.5% (8 d.f.)
Potatoes:	Total tubers,	Whole plot:	1.472 or 8.7% (8 d.f.)
		Sub plot:	0.887 or 5.3% (8 d.f.)
Barley:	Grain,	Whole plot:	2.80 or 7.9% (8 d.f.)
		Sub plot:	2.88 or 8.1% (9 d.f.)

68/B/6.3

SUMMARY OF RESULTS

SPRING BEANS

GRAIN

	P	R	T	Mean
Mean (±0.58)	22.3	21.2	19.9	21.1
M (±1.01)	22.9	20.4	21.1	21.5 (±0.58)
S (±0.71)	22.0	21.6	19.3	21.0 (±0.41)
		(1) and (2)		
O	22.4	20.4	20.4	21.1
G	22.2	22.0	19.4	21.2

(1) (±0.64) For use in horizontal and diagonal comparisons only
(2) (±0.37) For use in vertical and interaction comparisons only

A	AG	B	BG	C	CG
20.4	18.4	16.9	17.2	22.7	22.6

General mean: 20.8

Mean D.M. %: 76.9

WHEAT

GRAIN

	P	R	T	Mean
Mean (±0.98)	35.2	38.1	38.2	37.2
M (±1.70)	38.0	37.5	38.9	38.1 (±0.98)
S (±1.20)	33.9	38.5	37.9	36.7 (±0.69)
		(1) and (2)		
O	35.2	38.1	38.0	37.1
G	35.2	38.2	38.5	37.3
		(1) and (2)		
O	34.9	38.6	39.1	37.5
H	35.6	37.7	37.3	36.9

(1) (±1.09) For use in horizontal and diagonal comparisons only
(2) (±0.67) For use in vertical and interaction comparisons only

A	AG	AH	AGH	BH	BGH	C	CG
32.9	38.0	34.0	30.4	30.9	35.3	39.8	39.9

General mean: 36.8

Mean D.M. %: 83.2

68/B/6.5

POTATOES: TOTAL TUBERS

	P	R	T	Mean
Mean (±0.425)	18.19	15.72	16.59	16.84
		(±0.736)		(±0.425)
M	17.42	14.91	15.81	16.05
S	18.31	15.71	16.42	16.81
SY	18.83	16.55	17.55	17.65
		(1) and (2)		(±0.209)
O	18.12	15.47	16.24	16.61
G	18.25	15.98	16.95	17.06

A	AG	B	BG	C	CG
15.70	17.37	14.86	15.01	19.66	19.01

(1) (±0.496) For use in horizontal and diagonal comparisons only
(2) (±0.362) For use in vertical and interaction comparisons only

General mean: 16.86

68/B/6.6

POTATOES: % WARE

	P	R	T	Mean
Mean	98.9	98.9	98.9	98.9
M	98.9	98.7	98.8	98.8
S	98.8	98.8	98.9	98.8
SY	99.0	99.0	99.1	99.1
O	98.9	99.0	98.8	98.9
G	98.9	98.7	99.0	98.9

A	AG	B	BG	C	CG
99.0	99.2	98.8	99.2	98.8	99.1

General Mean: 98.9

68/B/6.7

BARLEY

GRAIN

	P	R	T	Mean
Mean (±0.81)	36.3	35.0	35.8	35.7
		(±1.40)		(±0.81)
M	36.5	36.2	35.4	36.0
S	33.9	35.2	36.9	35.3
SY	38.5	33.4	35.0	35.6
		(1) and (2)		(±0.68)
O	35.2	33.1	33.2	33.9
H	37.3	36.8	38.3	37.5
	A	AH	B	C
	33.4	36.5	34.7	32.2

(1) (±1.16) For use in horizontal and diagonal comparisons only
(2) (±1.17) For use in vertical and interaction comparisons only

General mean: 35.2

Mean D.M.%: 85.0

68/B/7.1

INTENSIVE CEREALS

(WIC)

Woburn Stackyard Classical Site 1968 - the third year

For treatments, and previous years' results, see 'Results' 66/B/9 and 67/B/9.

Area of each sub-plot: 0.0103. Area harvested: Ley - 0.0022, wheat - 0.0033, barley - 0.0066, potatoes - 0.0034.

Wheat blocks only: A test of magnesium was introduced on eighth plots: None (O), 162 lb MgO as Epsom salts (MG).

Basal applications:

All crops: 1.0 cwt P_2O_5, 2.0 cwt K_2O, half ploughed in, half worked into the seedbed.
Potatoes: 1.2 cwt N as 'Nitro-Chalk'.
Ley: 0.4 cwt N as 'Nitro-Chalk'.

Cultivations, etc.:

All plots: Half PK applied: 14 Sept, 1967. Ploughed: 15 - 16 Sept.

Ley: Mg and remaining PK applied, seeds sown at 29 lb: 20 Sept. 'Nitro-Chalk' applied: 27 Mar, 1968. Cut twice: 5 June, 6 Aug.

Potatoes: Sprayed with paraquat at 0.5 lb in 33 gals on the permanent barley blocks: 2 Mar. Remaining PK, 'Nitro-Chalk', and Mg applied: 26 Mar. Rotary cultivated, potatoes planted: 27 Mar. Earthed up: 22 May. Grubbed, rotary ridged: 13 June. Sprayed with mancozeb at 1.2 lb plus demeton-s-methyl at 3.5 oz in 38 gals on the permanent wheat blocks only: 12 July. Sprayed with mancozeb at 1.2 lb in 38 gals: 18 July, 30 July. Sprayed with undiluted BOV at 15 gals: 4 Sept. Lifted: 24 Sept.

Wheat: Remaining PK and Mg applied, seed drilled at 170 lb: 13 Oct, 1967. 'Nitro-Chalk' applied: 9 Apr, 1968. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 25 gals): 25 Apr. Combine harvested: 22 Aug.

Barley: Sprayed with paraquat at 0.5 lb in 33 gals: 2 Mar. Remaining PK applied: 4 Mar. Seed drilled at 140 lb: 6 Mar. 'Nitro-chalk' applied 15 Mar. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 25 gals): 26 Apr. Combine harvested: 20 Aug.

NOTE: (1) Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in May and June on barley and in April and July on wheat.

Standard errors per plot:

Ley, dry matter:	Wheat blocks 1/4 plot
1st cut:	4.56 or 11.1% (4 d.f.)
2nd cut:	1.06 or 8.6% (4 d.f.)
Total of 2 cuts:	4.28 or 8.0% (4 d.f.)
Wheat, grain:	
1/4 plot:	2.02 or 8.4% (12 d.f.)
1/8 plot:	1.63 or 6.8% (16 d.f.)
Barley, grain:	
1/4 plot:	2.16 or 7.7% (12 d.f.)
Potatoes, total tubers:	Wheat blocks
1/4 plot:	1.528 or 14.3% (4 d.f.)

68/B/7.3

SUMMARY OF RESULTS

LEY (C4)

PERMANENT WHEAT BLOCK

N in 1966

	N1	N2	N3	N4	Mean
		1ST CUT			
		(±3.22)*			(±1.61)
O	35.2	42.4	43.1	42.2	40.7
MG	39.5	40.3	41.7	44.5	41.5
Mean	37.3	41.4	42.4	43.4	41.1
		2ND CUT			
		(±0.75)*			(±0.38)
O	9.0	9.8	9.9	12.4	10.3
MG	14.3	14.2	14.1	14.4	14.3
Mean	11.7	12.0	12.0	13.4	12.3
		TOTAL OF 2 CUTS			
		(±3.02)*			(±1.51)
O	44.2	52.3	53.0	54.6	51.0
MG	53.8	54.5	55.8	58.9	55.8
Mean	49.0	53.4	54.4	56.8	53.4

Mean D.M. %: 1st cut: 22.7
2nd cut: 22.4
Total of 2 cuts: 22.5

* For use in vertical and interaction comparisons only

68/B/7.4

LEY (C4)

PERMANENT BARLEY BLOCK

N in 1966

N1	N2	N3	N4	Mean
		1ST CUT		
49.7	46.0	46.6	46.9	47.3
		2ND CUT		
14.8	14.6	16.0	17.1	15.6
		TOTAL OF 2 CUTS		
64.4	60.6	62.6	64.0	62.9

Mean D.M. %: 1st cut: 22.7
2nd cut: 20.4
Total of 2 cuts: 21.6

WHEAT (C1, C2, C3, C6)

GRAIN

Crop in 1966	Crop in 1967	N1	N2	N3	N4	O	MG	Mean
		(±1.43)*				(±0.58)*		(±1.48)
L	P	28.2	34.5	32.6	29.0	31.2	31.0	31.1
P	W	21.8	27.2	28.4	28.9	25.7	27.4	26.6
W	W	13.2	18.5	24.5	22.1	19.2	19.9	19.6
W	W	17.2	17.7	20.3	20.7	18.0	19.9	19.0
						(1) and (2)		(±0.71)
				N1		20.3	19.9	20.1
				N2		23.7	25.2	24.4
				N3		25.8	27.1	26.4
				N4		24.5	25.9	25.2
				Mean (±0.29)		23.5	24.6	24.0

(1) (±0.82) For use in vertical and diagonal comparisons only
(2) (±0.58) For use in horizontal and interaction comparisons only

* For use in horizontal and interaction comparisons only

Mean D.M. %: 85.0

68/B/7.6

WHEAT (C1, C2, C3, C6)

STRAW

Crop in 1966	Crop in 1967	N1	N2	N3	N4	O	MG	Mean
L	P	31.9	40.0	39.0	36.6	36.5	37.2	36.9
P	W	26.4	36.6	36.0	37.6	33.2	35.1	34.1
W	W	19.3	27.0	32.6	31.0	27.3	27.7	27.5
W	W	20.5	24.8	28.3	26.7	24.3	25.8	25.1
				N1		23.9	25.1	24.5
				N2		31.6	32.6	32.1
				N3		33.6	34.4	34.0
				N4		32.2	33.7	33.0
				Mean		30.3	31.5	30.9

Mean D.M. %: 80.2

68/B/7.7

BARLEY (C1, C2, C3, C6)

PERMANENT BARLEY BLOCKS

GRAIN

Crop in 1966	1967	N1	N2	N3	N4	Mean
			(±1.53)*			(±1.56)
L	P	30.2	34.3	29.1	26.8	30.1
P	B	25.5	31.6	29.3	25.5	27.9
B	B	21.8	28.8	27.0	25.9	25.9
B	B	24.4	31.2	28.9	27.8	28.1
Mean (±0.76)		25.5	31.5	28.6	26.5	28.0

* For use in horizontal and interaction comparisons only

Mean D.M. %: 81.0

68/B/7.8

POTATOES (C5)

PERMANENT WHEAT BLOCKS

N in 1967

	N1	N2	N3	N4	Mean
		TOTAL TUBERS			
		(±1.080)*			(±0.540)
O	11.17	9.51	12.02	9.23	10.48
MG	11.72	9.79	11.94	10.08	10.88
Mean	11.45	9.65	11.98	9.66	10.68
		% WARE			
O	94.9	96.4	95.2	94.9	95.4
MG	96.2	96.2	96.9	96.1	96.3
Mean	95.6	96.3	96.0	95.5	95.9

68/B/7.9

POTATOES (C5)

PERMANENT BARLEY BLOCKS

N in 1967

N1	N2	N3	N4	Mean
		TOTAL TUBERS		
12.91	13.91	13.95	13.88	13.66
		% WARE		
97.4	96.6	96.5	96.5	96.8

68/B/8.1

LONG TERM PHOSPHATE

(WLP)

To assess the residual and cumulative effects of superphosphate - Woburn Stackyard III 1968, 1st year.

Design: 6 blocks of 6 plots, split into two. Half plots received uniform treatment in 1968 but later there will be a test of phosphate.

Area of each sub plot: 0.0167. Area harvested: 0.0111.

Treatments: Superphosphate: None (R0) (2 plots per block), 1.5 (R1), 3.0 (R2), 6.0 (R4), 9.0 (R6) cwt P2O5 as superphosphate.

Basal applications: Both crops: 5 cwt K2O as sulphate of potash, 2.0 cwt MgO as Epsom salts in August 1967.
Potatoes: 2.0 cwt N as 'Nitro-Chalk' and 1.5 cwt K2O as sulphate of potash in spring. Weedkiller: Linuron at 0.5 lb plus paraquat at 0.37 lb ion in 50 gals. Fungicide: Mancozeb at 1.2 lb in 38 gals. Insecticide: Demeton-s-methyl at 3.5 oz in 38 gals.
Barley: 23 cwt ground chalk. 1.2 cwt N as 'Nitro-Chalk' and 0.5 cwt K2O as muriate of potash in spring. Weedkiller: Ioxynil/mecoprop (Actril C at 5 pints in 25 gals).

Cultivations, etc.: Both crops: Rotary cultivated: 13 June, 1967. Subsoiled: 20 - 21 June, 30 June - 3 July, 3 - 4 July (3 directions). Deep-tine cultivated: 6 July. Basal K and Mg applied: 9 Aug. Phosphate treatments applied: 15 - 16 Aug. Fallow since 1963 (the site was part of the site of the Woburn Classical Experiments).
Potatoes: 'Nitro-Chalk' applied: 18 Mar, 1968. Sulphate of potash applied: 19 Mar. Rotary cultivated, potatoes planted: 27 Mar. Weedkiller applied: 3 May. Rotary ridged: 13 June. Fungicide and insecticide applied: 12 July, 24 July. Fungicide applied: 30 July. Sprayed with undiluted BOV at 15 gals: 4 Sept. Lifted: 25 Sept. Variety: Majestic.

Barley: Ground chalk applied: 11 Dec, 1967. 'Nitro-Chalk' applied, spring-tine cultivated: 4 Mar, 1968. Muriate of potash applied, seed drilled at 140 lb: 6 Mar. Weedkiller applied: 3 May. Combine harvested: 20 Aug. Variety: Maris Badger.

Standard errors per plot.

Potatoes:	Total tubers:	Whole plot:	0.478 or 3.8% (10 d.f.)
Barley:	Grain:	Whole plot:	0.49 or 1.5% (10 d.f.)

68/B/8.3

SUMMARY OF RESULTS

R0	R1	R2	R4	R6	Mean
		POTATOES			
		TOTAL TUBERS			
(±0.195) 10.65	12.22	(±0.276) 12.29	14.76	13.81	12.40
		% WARE			
95.8	96.3	96.3	97.0	96.6	96.3
		BARLEY			
		GRAIN			
(±0.20) 32.6	33.9	(±0.29) 34.1	34.7	34.2	33.7
		STRAW			
31.3	35.7	35.8	36.8	36.5	34.5

Mean D.M. %: Grain: 81.6
Straw: 85.4

68/C/1.1

K, MG AND NA

(LM)

K, Mg and Na - Rothamsted Sawyers I - the 10th year, grass.

Design: 3 x 3 x 3 arrangement in 6 blocks of 9 plots, with 3 blocks (1 replicate) at each of 2 levels of Ca.
In addition a 3 x 3 arrangement in 2 blocks of 9 (1 at each level of Ca).

Area of each plot: 0.0209. Area harvested: 0.0050.

Treatments (applied 1959 - 1967):
Blocks receiving sodium treatments. All combinations of:-
1. (To blocks). Magnesium-free calcium carbonate in 1959 and 1962 as follows:
   10 cwt in 1959, 38 cwt in 1962 (Ca1).
   40 cwt in 1959, 76 cwt in 1962 (Ca2).
2. Mg applied each year: None (Mg0), 29 (Mg1), 58 (Mg2) lb Mg applied as magnesium sulphate.
3. K applied each year: (in lb K, as sulphate of potash). None (K0), 68 (K1), 136 (K2).
4. Na (1966 and 1967 only): None (Na0), 130 lb Na as sodium chloride (NaCl), 130 lb as sodium carbonate (NaC).

Blocks not receiving sodium treatments. All combinations of (1), (2), (3) above.

Basal applications: 0.5 cwt P2O5 as triple superphosphate in seedbed, 0.5 cwt N as 'Nitro-Chalk' in seedbed, 1.0 cwt N as 'Nitro-Chalk' for each cut.

Cultivations, etc.: Ploughed: 12 Sept, 1967. Basal N and P applied: 13 Sept. Rotary cultivated: 14 Sept. Seed drilled at 40 lb: 20 Sept. 'Nitro-Chalk' applied: 26 Mar, 1968. Cut 4 times: 22 May, 2 July, 14 Aug, 4 Nov. 'Nitro-Chalk' applied after first 3 cuts. Variety: S22 Italian Ryegrass.

NOTES: (1) The percentages of Na, Mg and K in the crop were determined.
(2) For previous years' results see 'Results' 60/Ci/3, 61/C/7, 62/C/6, 63/C/1, 64/C/1, 65/C/1, 66/C/1, 67/C/1.

Standard errors per plot. Dry matter:

1st cut:	1.73 or 3.4% (34 d.f.)
2nd cut:	1.68 or 4.7% (34 d.f.)
3rd cut:	1.81 or 7.0% (34 d.f.)
4th cut:	1.84 or 11.9% (34 d.f.)
Total of 4 cuts:	3.63 or 2.8% (34 d.f.)

SUMMARY OF RESULTS

BLOCKS RECEIVING SODIUM TREATMENTS

DRY MATTER

	MgO	Mg1	Mg2	KO	K1	K2	NaO	NaC1	NaC	Mean
					1ST CUT					
					(±0.58)*					
Ca1	51.0	50.8	51.3	48.6	51.8	52.7	51.2	51.9	50.1	51.0
Ca2	51.1	51.2	50.5	47.6	52.3	52.9	49.8	51.6	51.4	50.9
Mean (±0.41)	51.0	51.0	50.9	48.1	52.1	52.8	50.5	51.7	50.8	51.0

	KO	K1	K2	NaO	NaC1	NaC		NaO	NaC1	NaC
		(±0.71)			(±0.71)				(±0.71)	
MgO	48.0	52.5	52.6	49.8	51.9	51.4	KO	47.8	48.8	47.7
Mg1	48.6	51.9	52.6	51.0	51.6	50.4	K1	51.8	52.6	51.8
Mg2	47.7	51.8	53.2	50.6	51.6	50.4	K2	51.9	53.8	52.6

* For use in horizontal and interaction comparisons

Mean D.M. % (all plots): 16.0

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68/C/1.3

BLOCKS RECEIVING SODIUM TREATMENTS

DRY MATTER

	MgO	Mg1	Mg2	KO	K1	K2	NaO	NaC1	NaC	Mean
					2ND CUT					
					(±0.56)*					
Ca1	35.3	35.8	36.3	33.4	36.5	37.6	35.7	35.8	36.0	35.8
Ca2	36.3	36.8	35.7	35.0	37.4	36.3	36.0	36.3	36.5	36.2
Mean (±0.40)	35.8	36.3	36.0	34.2	36.9	37.0	35.8	36.0	36.2	36.0

	KO	K1	K2	NaO	NaC1	NaC		NaO	NaC1	NaC
		(±0.69)			(±0.69)				(±0.69)	
MgO	34.2	36.2	37.1	35.5	35.7	36.3	KO	34.6	34.1	34.0
Mg1	34.4	37.0	37.5	37.0	35.7	36.2	K1	36.8	36.2	37.8
Mg2	34.1	37.5	36.3	35.0	36.8	36.1	K2	36.2	37.8	36.8

* For use in horizontal and interaction comparisons

Mean D.M. % (all plots): 20.8

68/c/1.4

BLOCKS RECEIVING SODIUM TREATMENTS

DRY MATTER

	Mg0	Mg1	Mg2	K0	K1	K2	Na0	NaC1	NaC	Mean
					3RD CUT					
					(±0.60)*					
Ca1	24.5	26.0	25.7	23.2	26.9	26.1	24.5	26.0	25.7	25.4
Ca2	26.1	25.9	26.4	23.2	26.8	28.4	26.0	25.8	26.6	26.1
Mean (±0.43)	25.3	26.0	26.0	23.2	26.8	27.3	25.3	25.9	26.2	25.8

	K0	K1	K2	Na0	NaC1	NaC		Na0	NaC1	NaC
		(±0.74)			(±0.74)				(±0.74)	
Mg0	23.4	26.0	26.5	24.8	25.0	26.0	K0	22.8	23.3	23.4
Mg1	23.2	27.4	27.2	25.4	26.4	26.1	K1	26.0	27.4	27.1
Mg2	23.0	27.1	28.0	25.6	26.2	26.4	K2	27.0	26.9	27.9

* For use in horizontal and interaction comparisons

Mean D.M. % (all plots): 14.9

68/C/1.5

BLOCKS RECEIVING SODIUM TREATMENTS

DRY MATTER

	MgO	Mg1	Mg2	KO	K1	K2	NaO	NaCl	NaC	Mean
					4TH CUT					
					(±0.61)*					
Ca1	15.8	14.6	15.9	12.8	16.7	16.7	14.8	16.4	15.0	15.4
Ca2	16.5	16.2	16.4	13.6	18.1	17.5	16.5	16.4	16.3	16.4
Mean (±0.43)	16.2	15.4	16.2	13.2	17.4	17.1	15.6	16.4	15.7	15.9

	KO	K1	K2	NaO	NaCl	NaC		NaO	NaCl	NaC
		(±0.75)			(±0.75)				(±0.75)	
MgO	13.9	17.6	17.0	16.0	17.0	15.4	KO	13.4	14.2	12.2
Mg1	13.4	17.0	15.8	15.4	16.0	14.8	K1	16.8	17.6	17.8
Mg2	12.5	17.6	18.4	15.5	16.2	16.8	K2	16.8	17.4	17.0

* For use in horizontal and interaction comparisons

Mean D.M. % (all plots): 15.8

68/C/1.6

BLOCKS RECEIVING SODIUM TREATMENTS

DRY MATTER

	MgO	Mg1	Mg2	KO	K1	K2	NaO	NaC1	NaC	Mean
				TOTAL OF 4 CUTS						
					(±1.21)*					
Ca1	126.5	127.3	129.2	118.0	131.9	133.0	126.2	130.0	126.8	127.6
Ca2	130.1	130.2	128.9	119.4	134.6	135.2	128.3	130.1	130.8	129.7
Mean (±0.86)	128.3	128.7	129.0	118.7	133.2	134.1	127.3	130.1	128.8	128.7

	KO	K1	K2	NaO	NaC1	NaC		NaO	NaC1	NaC
		(±1.48)			(±1.48)				(±1.48)	
MgO	119.4	132.4	133.2	126.2	129.6	129.0	KO	118.4	120.4	117.4
Mg1	119.6	133.4	133.2	128.8	129.8	127.6	K1	131.6	133.7	134.4
Mg2	117.3	133.9	135.8	126.7	130.8	129.7	K2	131.8	136.0	134.4

* For use in horizontal and interaction comparisons

Mean D.M. % (all plots): 16.9

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BLOCKS NOT RECEIVING SODIUM TREATMENTS

DRY MATTER

	MgO	Mg1	Mg2	K0	K1	K2	Mean
		1ST CUT					
		(±1.00)*			(±1.00)*		
Ca1	49.8	51.3	51.2	46.7	53.8	51.7	50.8
Ca2	47.4	47.2	47.8	43.9	48.9	49.7	47.5
					(±1.22)		(±0.71)
		MgO		45.9	49.8	50.0	48.6
		Mg1		45.6	52.1	50.0	49.2
		Mg2		44.5	52.0	52.2	49.5
		Mean (±0.71)		45.3	51.3	50.7	49.1

* For use in horizontal and interaction comparisons

BLOCKS NOT RECEIVING SODIUM TREATMENTS

DRY MATTER

	MgO	Mg1	Mg2	KO	K1	K2	Mean
		2ND CUT					
		(±0.97)*			(±0.97)*		
Ca1	34.6	35.8	34.8	32.5	37.0	35.7	35.1
Ca2	35.9	37.0	35.1	34.0	36.4	37.6	36.0
					(±1.19)		(±0.69)
		MgO		33.9	35.9	36.0	35.3
		Mg1		33.8	37.3	38.1	36.4
		Mg2		32.0	36.9	35.9	34.9
		Mean (±0.69)		33.3	36.7	36.6	35.5

* For use in horizontal and interaction comparisons

68/C/1.9

BLOCKS NOT RECEIVING SODIUM TREATMENTS

DRY MATTER

	Mg0	Mg1	Mg2	K0	K1	K2	Mean
		3RD CUT					
		(±1.05)*			(±1.05)*		
Ca1	24.5	24.0	24.2	21.1	24.7	26.8	24.2
Ca2	26.0	26.9	26.6	22.4	27.8	29.3	26.5
					(±1.28)		(±0.74)
		Mg0		21.2	25.6	29.0	25.3
		Mg1		22.7	26.1	27.6	25.4
		Mg2		21.5	27.1	27.7	25.4
		Mean (±0.74)		21.8	26.3	28.1	25.4

* For use in horizontal and interaction comparisons

68/C/1.10

BLOCKS NOT RECEIVING SODIUM TREATMENTS

DRY MATTER

	MgO	Mg1	Mg2	KO	K1	K2	Mean
		4TH CUT					
		(±1.06)*			(±1.06)*		
Ca1	15.8	14.1	12.9	11.1	16.2	15.5	14.3
Ca2	12.6	14.3	13.3	11.8	13.9	14.5	13.4
					(±1.30)		(±0.75)
		MgO		11.9	15.5	15.3	14.2
		Mg1		11.8	15.7	15.0	14.2
		Mg2		10.6	14.1	14.7	13.1
		Mean (±0.75)		11.4	15.1	15.0	13.8

* For use in horizontal and interaction comparisons

BLOCKS NOT RECEIVING SODIUM TREATMENTS

DRY MATTER

	MgO	Mg1	Mg2	KO	K1	K2	Mean
		TOTAL OF 4 CUTS					
		(±2.10)*			(±2.10)*		
Ca1	124.7	125.2	123.1	111.4	131.8	129.8	124.3
Ca2	122.0	125.4	122.9	112.1	127.0	131.1	123.4
					(±2.57)		(±1.48)
		MgO		112.9	126.9	130.3	123.3
		Mg1		113.9	131.2	130.7	125.3
		Mg2		108.5	130.1	130.5	123.0
		Mean (±1.48)		111.8	129.4	130.5	123.9

* For use in horizontal and interaction comparisons

68/C/2.1

INTENSIVE BARLEY GROWING EXPERIMENT

(IB)

Little Knott I - 1968, the eighth year

For treatments, etc., see 'Results' 61/C/8 (N0 = None, N1 = 0.3, N2 = 0.6, N3 = 0.9 cwt N).

Area of each plot: 0.0212. Area harvested: Spring wheat - 0.0188, barley - 0.0139.

Winter wheat, sequence 9: These plots were fallowed in 1968 because of Blackgrass (Alopecurus myosuroides) and Couchgrass (Agropyron repens).

Basal applications: Manures as previously.
Weedkillers: All plots: Aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 32 gals. Spring wheat and barley: Ioxynil at 7.5 oz and mecoprop at 22.5 oz in 20 gals.

Cultivations, etc.:- Aminotriazole etc. applied: 21 Sept, 1967.
Ploughed: 30 Oct.
Spring wheat: Seed combine drilled at 175 lb: 6 Mar, 1968. 'Nitro-Chalk' applied: 20 Mar. Weedkiller applied: 6 May. Combine harvested: 24 Aug.
Barley: Seed combine drilled at 140 lb: 6 Mar, 1968. 'Nitro-Chalk' applied: 20 Mar. Weedkiller applied: 6 May. Combine harvested: 20 Aug.
Fallow plots: Rotary cultivated 4 times: 12 Apr, 29 May, 18 June, 6 Aug, 1968.

NOTES: (1) Yields were taken for all sequences except 9 (fallow).
(2) Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in spring and summer.
(3) For previous years' results see 'Results' 61/C/8, 62/C/7, 63/C/2, 64/C/2, 65/C/2, 66/C/2, 67/C/2.

Standard errors per plot.
Barley, Grain: 2.86 or 9.6% (31 d.f.)

SUMMARY OF RESULTS

SPRING WHEAT (8)

CROP 1961 - 1967 SW

GRAIN

N0	N1	N2	N3	Mean
11.4	13.8	20.3	19.9	16.3

Mean D.M. %: 82.1

BARLEY (1 - 7 & 10)

GRAIN

Crop in 61 62 63 64 65 66 67	N0	N1	N2	N3	Mean
		(±2.02)			(±1.01)
O Be B B B B B	12.8	27.1	33.1	35.2	27.1
SW O Be B B B B	16.4	24.2	32.5	35.1	27.1
O SW O Be B B B	15.3	25.1	30.5	34.3	26.3
Be O SW O Be B B	14.0	27.3	31.5	35.4	27.0
SW Be O SW O Be B	26.9	29.7	34.0	36.2	31.7
SW SW Be O SW O Be	30.3	36.3	38.6	35.9	35.3
B B B B B B B	15.0	28.0	35.9	36.6	28.9
Be WW P B Be WW P	32.2	35.9	35.5	34.4	34.5
Mean (±0.71)	20.4	29.2	33.9	35.4	29.7

Mean D.M. %: 82.7

68/C/3.1

LONG TERM LIMING EXPERIMENT

POTATOES 1968

(LL and WLL)

Rothamsted Sawyers I (R) and Woburn Stackyard Series C (W) - the seventh year.

For treatments etc. see 'Results' 63/C/3 and for previous years' results see 62/C/8, 63/C/3, 64/C/3, 65/C/3, 66/C/3 and 67/C/3.

Design: 2 randomised blocks of 16 plots.

Area of each plot: 0.0284. Area harvested: Sawyers I (R): 0.0095. Stackyard C (W): 0.0126.

Treatments: All combinations of:-

1. Ground chalk (tons) applied 1962 - 1963.

	Sawyers I (R)	Stackyard Series C (W)
CA0	0	0
CA2	2	2
CA4	4	4.75
CA8	8	7.5

2. P: None (P0), 1.0 (P1) cwt P_2O_5 as superphosphate.
3. K: None (K0), 1.5 (K1) cwt K_2O as muriate of potash.

Basal applications:

Sawyers I (R): 1.5 cwt N as 'Nitro-Chalk' broadcast before planting. Weedkiller: Paraquat at 0.38 lb ion and linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz applied with the second spraying of mancozeb.

Stackyard Series C (W): 2.0 cwt N as 'Nitro-Chalk' broadcast before planting. Weedkiller: Paraquat at 0.38 lb ion and linuron at 0.5 lb in 50 gals. Fungicide: Mancozeb at 1.2 lb in 38 gals on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz applied with the first spraying of mancozeb.

Cultivations, etc.:-

Sawyers I (R): Ploughed: 25 Sept, 1967. 'Nitro-Chalk' applied: 28 Mar, 1968. P and K applied, plots rotary cultivated, potatoes machine planted: 4 Apr. Weedkiller applied: 3 May. Fungicide applied: 4 July, 19 July, 5 Aug. Insecticide applied: 19 July. Sprayed with undiluted BOV at 15 gals: 30 Aug. Lifted: 3 Oct. Variety: Majestic.

Stackyard Series C (W): Ploughed: 15 Nov, 1967. 'Nitro-Chalk' applied: 26 Mar, 1968. P and K applied, plots rotary cultivated: 28 Mar. Potatoes machine planted: 29 Mar. Weedkiller applied: 3 May. Rotary ridged: 13 June. Fungicide applied: 12 July, 18 July, 30 July. Insecticide applied: 12 July. Sprayed with undiluted BOV at 15 gals: 4 Sept. Lifted: 2 Oct. Variety: Majestic.

Standard errors per plot. Tubers:

Sawyers I (R):	1.981 or 19.7% ((15 d.f.)
Stackyard C (W):	1.021 or 10.1% (15 d.f.)

68/C/3.3

SUMMARY OF RESULTS

SAWYERS I (R)

TOTAL TUBERS

	CA0	CA2	CA4	CA8	Mean
Mean (±0.700)	9.19	10.38	10.68	9.93	10.05
		(±0.990)			(±0.495)
P0	7.58	9.50	10.05	8.18	8.83
P1	10.80	11.26	11.32	11.69	11.27
K0	8.89	8.44	8.27	7.27	8.22
K1	9.49	12.33	13.09	12.59	11.88

	P0	P1
	(±0.700)	
K0	7.63	8.80
K1	10.02	13.73

	CA0		CA2		CA4		CA8	
	K0	K1	K0	K1	K0	K1	K0	K1
				(±1.401)				
P0	8.36	6.79	9.26	9.75	8.09	12.01	4.82	11.54
P1	9.41	12.19	7.61	14.91	8.46	14.18	9.73	13.65

68/C/3.4

SAWYERS I (R)

% WARE

	CA0	CA2	CA4	CA8	Mean
Mean	96.3	95.7	96.4	95.4	95.9
P0	96.7	97.2	96.9	94.1	96.2
P1	95.9	94.2	95.8	96.7	95.7
K0	95.7	93.9	94.8	92.9	94.3
K1	96.9	97.5	97.9	97.9	97.6

	P0	P1
K0	94.8	93.9
K1	97.7	97.5

	CA0		CA2		CA4		CA8	
	K0	K1	K0	K1	K0	K1	K0	K1
P0	96.7	96.7	96.9	97.5	95.1	98.6	90.5	97.8
P1	94.7	97.2	91.0	97.4	94.5	97.2	95.3	98.1

68/C/3.5

STACKYARD SERIES C (W)

TOTAL TUBERS

	CA0	CA2	CA4	CA8	Mean
Mean (±0.361)	10.67	10.31	9.63	9.76	10.09
		(±0.510)			(±0.255)
P0	8.21	9.39	8.18	8.77	8.64
P1	13.12	11.22	11.08	10.74	11.54
K0	8.65	7.04	6.40	6.57	7.17
K1	12.68	13.58	12.86	12.94	13.01

	P0	P1
	(±0.361)	
K0	6.29	8.04
K1	10.98	15.05

	CA0		CA2		CA4		CA8	
	K0	K1	K0	K1	K0	K1	K0	K1
				(±0.722)				
P0	6.90	9.52	6.11	12.66	5.90	10.46	6.26	11.28
P1	10.41	15.84	7.96	14.49	6.91	15.25	6.88	14.60

68/C/3.6

STACKYARD SERIES C (W)

% WARE

	CA0	CA2	CA4	CA8	Mean
Mean	94.9	94.8	95.0	95.7	95.1
P0	94.9	94.2	95.5	96.9	95.4
P1	94.9	95.4	94.5	94.4	94.8
K0	93.2	92.4	92.0	93.6	92.8
K1	96.6	97.2	98.0	97.8	97.4

	P0	P1
K0	93.1	92.5
K1	97.7	97.1

	CA0		CA2		CA4		CA8	
	K0	K1	K0	K1	K0	K1	K0	K1
P0	92.7	97.1	91.0	97.5	92.9	98.1	95.6	98.2
P1	93.6	96.2	93.9	96.9	91.2	97.8	91.5	97.4

68/C/4.1

SPRING WHEAT

(AF)

Residues of N,P and K to grass (the 11th year of 'Levels of N and K to grass'), Harwoods Piece 1968.

For treatments etc. see 'Results' 63/C/7.1 and 65/C/6.2 and for previous years' results see 58/Cg/2, 59/Cg/2, 60/Ci/1, 61/Dg/1, 62/C/11, 63/C/7, 64/C/6, 65/C/6, 66/C/5 and 67/C/4.

Area of each plot: 0.0082. Area harvested: 0.0054.

No treatment or basal P and K were applied in 1968.

Basal applications: 1.0 cwt N as 'Nitro-Chalk' broadcast by drill.
Weedkiller: Ioxynil at 7.5 oz and mecoprop at 22.5 oz in 20 gals.

Cultivations, etc.: Ploughed: 8 Nov, 1967. Seed drilled at 185 lb, 'Nitro-Chalk' applied: 5 Mar, 1968. Weedkiller applied: 15 May. Combine harvested: 27 Aug. Variety: Kloka.

NOTE: Soil samples were taken in October 1967 for pH and available P and K. Crop samples were taken at ear emergence for yield of dry matter and for determination of percentages of N, P and K. Grain and straw samples were taken at harvest for determination of percentages of N, P and K.

Standard error per plot:
Grain: 2.86 or 11.8% (33 d.f.)

SUMMARY OF RESULTS

N	0	1	1	1	2	2	2	3	3	3	3	3	
P	1	1	1	1	1	1	1	1	1	1	0	2	
K	0	0	1	2	0	1	2	0	1	2	2	2	Mean
GRAIN													
						(±1.43)							
	31.0	20.6	29.8	31.3	15.8	22.9	27.0	16.5	21.9	23.5	25.4	24.2	24.2
STRAW													
	33.3	20.9	33.5	39.9	20.5	27.1	33.6	14.9	21.6	28.8	32.5	32.1	28.2

Mean D.M. %: Grain: 82.5
Straw: 59.8

NOTE: Treatments were applied 1958/67

68/C/5.1

CEREAL DISEASE REFERENCE PLOTS

(AQ)

Pennells Piece 1968, the sixth year

For treatments etc., see 'Results' 63/C/10 (WW = Winter wheat, SW = Spring wheat, O = Oats, Be = Spring beans).

Area of each plot: 0.0180. Area harvested: Winter wheat - 0.0115, spring wheat - 0.0115.

Cultivations, etc.: Sprayed plots 1 - 12 (winter wheat blocks) with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 32 gals: 21 Sept, 1967. Ploughed: 23 Oct. Plots 1 - 12 rotary cultivated: 25 Oct.

Winter wheat: Seed combine drilled at 180 lb: 25 Oct, 1967. 'Nitro-Chalk' applied: 18 Mar, 1968. Sprayed with ioxynil at 7.5 oz and mecoprop at 22.5 oz in 20 gals: 27 Apr. Combine harvested: 24 Aug.

Spring wheat: Seed combine drilled at 175 lb: 6 Mar, 1968. 'Nitro-Chalk' applied: 18 Mar. Sprayed with ioxynil at 7.5 oz and mecoprop at 22.5 oz in 20 gals: 15 May. Combine harvested: 24 Aug.

Oats: Seed combine drilled at 165 lb: 8 Mar, 1968. 'Nitro-Chalk' applied: 18 Mar. Sprayed with ioxynil at 7.5 oz and mecoprop at 22.5 oz in 20 gals: 15 May. Combine harvested: 24 Aug.

Spring beans: Seed placement drilled at 200 lb: 6 Mar, 1968. 1.04 lb phorate applied in granules: 21 June. Combine harvested: 6 Sept.

NOTES: (1) Yields were taken for winter and spring wheat only (Crop sequences 1, 2, 3 and 6).
(2) Estimates were made throughout the growing season of the incidence of take-all (Ophiobulus graminis) and eyespot (Cercosporella herpotrichoides).
(3) For previous year's results see 'Results' 63/C/10, 64/C/9, 65/C/9, 66/C/7 and 67/C/5.

68/C/5.2

SUMMARY OF RESULTS

GRAIN

Crop in					Mean
1963	W	W	W	W	
1964	W	W	Be	W	
1965	W	Be	O	W	
1966	Be	O	W	W	
1967	O	W	W	W	
WINTER WHEAT					
	37.1	34.7	30.1	28.8	32.7
SPRING WHEAT					
	24.2	27.3	25.2	26.1	25.7

Mean D.M. %: Winter wheat: 84.1
Spring wheat: 81.3

IRRIGATION

(IR)

The effect of irrigation on potatoes and spring beans, Great Field I and II, 1968.

Design:
Potatoes: A single replicate of 2 blocks, each of 4 plots, with (KE v M) x (O-A-B+C) x (N4-N3+N2-N1) confounded with blocks. Plots divided into 6 sub plots, each subdivided into 2.
Spring beans: 2 randomised blocks of 4 plots each split into 7.

Area of each sub plot:-
Potatoes (1/12th plot): 0.0204. Area harvested: 0.0054.
Beans: 0.0321. Area harvested: 0.0193.

Treatments:
Potatoes:- All combinations of:-
Whole plots: 1. Irrigation: None (O), early (A), late (B), full (C).
To strips of four 1/6th plots: 2. Varieties and spacing: King Edward (KE), Majestic (M). Each variety with seed planted either 12(S1), 15(S2) or 18(S3) inches apart within the row.
1/12th plots: 3. Nitrogen: 1.0 (N1), 1.5 (N2), 2.0 (N3), 2.5 (N4) cwt N, 1 cwt as compound fertiliser (basal), the remainder as 'Nitro-Chalk'.
Spring beans:- All combinations of:-
Whole plots: 1. Irrigation: None (O), early (A), late (B), full (C).
Sub plots: 2. Aphicides (applied before flowering): None (O), 1.0 lb disulfoton in granules (DG), 1.0 lb disulfoton in granules applied early (DGE), 1.0 lb phorate in granules (PG), 1.0 lb phorate in granules applied early (PGE), 3.5 oz demeton-s-methyl in 37 gals (MS), 4.8 oz dimethoate in 37 gals (RS).

Basal applications:
Potatoes: 10 cwt (10:15:20). Weedkillers: Dalapon at 11 lb in 32 gals to bean stubble, paraquat at 0.38 lb plus linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 2 occasions. Insecticide: Demeton-s-methyl at 3.5 oz applied with mancozeb on one occasion.
Spring beans: 3.25 cwt (0:14:28) placement drilled. Weedkiller: Simazine at 1 lb in 33 gals.

Cultivations, etc.:-

Potatoes: Dalapon applied: 13 Oct, 1967. Ploughed: 13 Nov. Basal NPK compound applied: 22 Mar, 1968. 'Nitro-Chalk' applied, plots rotary cultivated, potatoes machine planted: 3 Apr. Paraquat and linuron applied: 3 May. Plots grubbed and rotary ridged: 10 June. Mancozeb applied: 3 July. Mancozeb and demeton-s-methyl applied: 19 July. Sprayed with undiluted BOV at 15 gals: 30 Aug. Lifted: 3 Oct. Previous crops: Barley 1966, spring beans 1967.

Spring beans: Ploughed: 28 Sept, 1967. Seed drilled at 200 lb: 5 Mar, 1968. Simazine applied: 8 Mar. PGE and DGE treatments applied: 7 June. PG and DG treatments applied: 22 June. MS treatment applied: 24 June. RS treatment applied: 29 June. Combine harvested: 12 Sept. Variety: Maris Bead. Previous crops: Potatoes 1966, barley 1967.

RAINFALL AND IRRIGATION: INCHES

Week-ending	Rain-fall	IRRIGATION Beans A	Beans B	Beans C	Potatoes A	Potatoes B	Potatoes C
May 5	1.22						
May 12	0.96						
May 19	0.32						
May 26	0.21						
June 2							
June 9	0.44	1.00		1.00			
June 16	0.08				1.00		1.00
June 23	0.52		1.00	1.00		1.00	1.00
June 30	1.14						
July 7	0.10						
July 14	2.37		1.00	1.00			
July 21	0.66						
July 28	0.16						
Aug 4	0.28		1.00	1.00			
Aug 11	1.16						
Aug 18	1.02						
Aug 25	0.02						
Sept 1	0.77						
Sept 8	0.20						
Sept 15	3.19						
Sept 22	0.60						
Sept 29	0.91						
Total	16.33	1.00	3.00	4.00	1.00	1.00	2.00

Standard error per plot. Grain:
Beans. Sub plot: 1.16 or 6.3% (24 d.f.)

SUMMARY OF RESULTS

POTATOES

TOTAL TUBERS

	O	A	B	C	Mean
KE	17.84	18.12	17.10	16.77	17.46
M	12.82	13.04	13.03	12.75	12.91
S1	16.19	16.36	15.93	15.62	16.02
S2	14.46	15.27	14.31	14.80	14.71
S3	15.35	15.12	14.94	13.86	14.82
N1	15.73	16.02	15.03	14.32	15.27
N2	15.43	15.62	15.08	14.61	15.18
N3	15.25	15.55	15.34	15.33	15.37
N4	14.92	15.13	14.80	14.78	14.91
Mean	15.33	15.58	15.06	14.76	15.18
KE S1	19.04	18.63	18.06	17.70	
KE S2	15.86	17.56	15.68	16.23	
KE S3	18.61	18.18	17.55	16.40	
M S1	13.34	14.09	13.80	13.54	
M S2	13.06	12.97	12.95	13.37	
M S3	12.08	12.06	12.33	11.33	
KE N1	17.95	18.73	16.90	15.91	
KE N2	17.82	18.12	17.12	16.47	
KE N3	18.38	18.50	17.07	17.53	
KE N4	17.21	17.15	17.29	17.18	
M N1	13.51	13.31	13.17	12.72	
M N2	13.04	13.12	13.03	12.75	
M N3	12.12	12.61	13.60	13.13	
M N4	12.63	13.11	12.31	12.37	

68/C/6.4

POTATOES

TOTAL TUBERS

	O	A	B	C
S1 N1	17.33	16.97	15.44	15.29
S1 N2	16.02	17.08	16.64	15.20
S1 N3	16.41	15.78	15.83	16.72
S1 N4	15.00	15.61	15.81	15.27
S2 N1	13.42	16.62	14.92	14.24
S2 N2	16.02	14.11	13.73	15.37
S2 N3	14.46	14.78	13.94	14.88
S2 N4	13.93	15.56	14.66	14.71
S3 N1	16.43	14.47	14.73	13.42
S3 N2	14.25	15.67	14.86	13.27
S3 N3	14.87	16.09	16.24	14.39
S3 N4	15.83	14.23	13.95	14.36

68/C/6.5

POTATOES

% WARE

	O	A	B	C	Mean
KE	96.0	96.6	96.0	96.1	96.2
M	97.3	97.2	97.1	97.3	97.2
S1	95.9	96.3	95.9	96.2	96.1
S2	96.6	97.1	96.6	96.8	96.8
S3	97.4	97.3	97.0	96.9	97.2
N1	96.9	96.8	96.3	96.8	96.7
N2	96.8	97.3	96.6	96.3	96.7
N3	96.6	96.9	96.3	96.7	96.6
N4	96.2	96.6	96.9	96.9	96.7
Mean	96.6	96.9	96.5	96.7	96.7
KE S1	95.1	95.8	95.1	95.4	
KE S2	95.8	96.8	95.9	96.2	
KE S3	97.1	97.2	97.0	96.6	
M S1	96.6	96.8	96.7	97.1	
M S2	97.4	97.4	97.3	97.5	
M S3	97.7	97.4	97.1	97.2	
KE N1	96.4	96.3	95.8	96.4	
KE N2	96.0	97.2	95.8	95.1	
KE N3	95.8	97.0	95.9	96.3	
KE N4	95.7	95.9	96.4	96.5	
M N1	97.4	97.4	96.8	97.2	
M N2	97.5	97.4	97.4	97.5	
M N3	97.3	96.8	96.6	97.1	
M N4	96.8	97.3	97.4	97.3	

68/C/6.6

POTATOES

% WARE

	O	A	B	C	Mean
S1 N1	96.1	96.4	95.3	96.5	
S1 N2	96.1	96.7	96.3	95.5	
S1 N3	96.6	96.6	95.7	96.6	
S1 N4	94.6	95.5	96.3	96.3	
S2 N1	96.6	97.2	96.0	97.0	
S2 N2	97.1	97.5	97.2	96.6	
S2 N3	95.9	96.5	95.9	96.6	
S2 N4	96.9	97.0	97.3	97.1	
S3 N1	97.9	96.9	97.6	96.9	
S3 N2	97.2	97.6	96.4	96.7	
S3 N3	97.4	97.5	97.2	96.9	
S3 N4	97.2	97.3	97.0	97.3	

SPRING BEANS

GRAIN

		(0.82)*			(±0.41)
O	20.1	19.5	17.5	17.1	18.6
DG	19.7	17.4	18.2	17.8	18.3
DGE	18.3	19.8	19.5	17.2	18.7
PG	19.1	17.4	19.1	16.9	18.1
PGE	21.2	18.9	19.8	19.0	19.7
MS	18.7	17.7	17.8	16.4	17.7
RS	18.3	17.1	18.0	15.5	17.2
Mean	19.4	18.3	18.6	17.1	18.3

Mean D.M. %: 75.4

* For use in vertical and interaction comparisons only

68/C/7.1

PARK GRASS MICROPLOTS

(EPG 81 - 160)

Plots 5/1 and 5/2, 1968, the fourth year

For details of treatments etc., and for previous years' results see 'Results' 65/C/22, 66/C/13 and 67/C/9.

Treatments K1P2 and K6P2 were applied in 1965 only. In each season these plots received N at current rates.

Area of each plot: 0.0045. Area harvested: 0.0021.

Cultivations, etc.: Ground chalk applied to plot 5/1 at 5490 lb and to plot 5/2 at 4930 lb: 28 Dec, 1967. P and K applied: 19 Jan, 1968. 'Nitro-Chalk' applied: 18 Mar. Cut 3 times: 29 May, 22 July, 7 Oct. 'Nitro-Chalk' applied after first 2 cuts.

Standard errors per plot. Dry matter:

Plot 5/1.	1st cut:	2.75 or 19.0% (11 d.f.)
	2nd cut:	3.51 or 21.1% (11 d.f.)
	3rd cut:	1.69 or 7.5% (11 d.f.)
	Total of 3 cuts:	6.12 or 11.4% (11 d.f.)
Plot 5/2.	1st cut:	2.16 or 6.8% (11 d.f.)
	2nd cut:	2.24 or 10.3% (11 d.f.)
	3rd cut:	2.06 or 7.6% (11 d.f.)
	Total of 3 cuts:	2.83 or 3.5% (11 d.f.)

68/C/7.2

SUMMARY OF RESULTS

PLOT 5/1: DRY MATTER

1ST CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.97)	7.2	17.0	20.7	19.6	16.1
		(±1.94)			(±0.97)
K0	4.5	12.3	15.0	9.9	10.4
K2	10.3	21.4	24.0	22.0	19.4
K4	7.3	20.1	22.9	22.7	18.2
K8	6.7	14.2	20.8	23.8	16.4
		(±1.38)			(±0.69)
N1	8.2	14.3	15.6	16.2	13.6
N2	6.2	19.7	25.8	23.0	18.7

	K0	K2	K4	K8
		(±1.38)		
N1	11.6	16.2	13.5	13.0
N2	9.3	22.6	23.0	19.7

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.94)		(±1.38)
N1	7.6	9.2	8.4
N2	7.2	7.7	7.5
Mean (±1.38)	7.4	8.5	8.0

* Applied 1965

General mean: 14.5
Mean D.M. %: 22.5

68/C/7.3

PLOT 5/1: DRY MATTER

2ND CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±1.24)	18.4	17.0	18.5	18.3	18.0
			(±2.48)		(±1.24)
K0	11.4	16.2	11.5	15.9	13.8
K2	19.4	18.1	20.4	16.5	18.6
K4	22.1	18.8	21.6	19.7	20.6
K8	20.6	15.0	20.5	21.1	19.3
			(±1.76)		(±0.88)
N1	18.0	14.5	17.1	16.5	16.5
N2	18.8	19.6	19.9	20.2	19.6

	K0	K2	K4	K8
			(±1.76)	
N1	13.8	16.5	18.8	16.9
N2	13.7	20.7	22.4	21.7

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±2.48)		(±1.76)
N1	11.9	11.1	11.5
N2	10.2	11.2	10.7
Mean (±1.76)	11.1	11.1	11.1

* Applied 1965

General mean: 16.6
Mean D.M. %: 22.7

68/C/7.4

PLOT 5/1: DRY MATTER

3RD CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.60)	20.0	23.4	24.5	24.5	23.1
		(±1.20)			(±0.60)
K0	20.6	21.8	22.5	21.1	21.5
K2	19.6	24.3	24.7	24.1	23.2
K4	19.0	23.9	24.8	27.6	23.8
K8	21.0	23.6	26.1	25.1	23.9
		(±0.84)			(±0.42)
N1	17.8	22.7	24.0	23.8	22.1
N2	22.3	24.1	25.0	25.2	24.1

	K0	K2	K4	K8
		(±0.84)		
N1	20.5	22.3	22.4	23.0
N2	22.5	24.0	25.2	24.9

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.20)		(±0.84)
N1	20.1	18.6	19.4
N2	20.9	21.3	21.1
Mean (±0.84)	20.5	20.0	20.2

* Applied 1965

General mean: 22.5
Mean D.M. %: 20.4

68/C/7.5

PLOT 5/1: DRY MATTER

TOTAL OF 3 CUTS

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±2.16)	45.6	57.4	63.7	62.4	57.3
		(±4.33)			(±2.16)
K0	36.5	50.4	49.0	46.9	45.7
K2	49.3	63.8	69.1	62.5	61.2
K4	48.4	62.8	69.4	70.0	62.6
K8	48.3	52.7	67.4	70.0	59.6
		(±3.06)			(±1.53)
N1	43.9	51.4	56.7	56.4	52.1
N2	47.3	63.4	70.7	68.3	62.4

	K0	K2	K4	K8
		(±3.06)		
N1	45.9	55.0	54.7	52.9
N2	45.5	67.3	70.6	66.3

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±4.33)		(±3.06)
N1	39.6	38.9	39.3
N2	38.4	40.2	39.3
Mean (±3.06)	39.0	39.6	39.3

* Applied 1965

General mean: 53.7
Mean D.M. %: 21.9

68/C/7.6

PLOT 5/2: DRY MATTER

1ST CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.76)	31.9	32.7	32.6	30.8	32.0
		(±1.53)			(±0.76)
K0	26.6	29.7	31.2	31.9	29.8
K2	34.2	34.5	34.6	32.1	33.8
K4	31.3	32.9	33.8	31.8	32.5
K8	35.6	33.8	30.6	27.4	31.9
		(±1.08)			(±0.54)
N1	22.4	22.0	22.8	18.1	21.3
N2	41.4	43.5	42.3	43.5	42.7

	K0	K2	K4	K8
		(±1.08)		
N1	19.7	22.2	22.5	20.9
N2	40.0	45.5	42.4	42.8

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.53)		(±1.08)
N1	22.6	22.7	22.7
N2	39.4	40.7	40.1
Mean (±1.08)	31.0	31.7	31.4

* Applied 1965

General mean: 31.9
Mean D.M. %: 20.6

PLOT 5/2: DRY MATTER

2ND CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.79)	22.0	20.8	21.4	20.5	21.2
		(±1.58)			(±0.79)
K0	22.1	21.8	21.9	20.1	21.5
K2	21.1	19.1	23.0	22.1	21.3
K4	21.9	21.1	20.8	20.5	21.1
K8	23.1	21.4	20.1	19.4	21.0
		(±1.12)			(±0.56)
N1	20.7	18.4	19.7	17.1	19.0
N2	23.4	23.3	23.2	24.0	23.5

	K0	K2	K4	K8
		(±1.12)		
N1	18.9	19.6	18.9	18.5
N2	24.0	23.1	23.2	23.5

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.58)		(±1.12)
N1	19.3	21.8	20.5
N2	26.4	29.0	27.7
Mean (±1.12)	22.8	25.4	24.1

* Applied 1965

General mean: 21.8
Mean D.M. %: 22.9

68/C/7.8

PLOT 5/2: DRY MATTER

3RD CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.73)	26.4	27.5	27.3	26.7	27.0
		(±1.46)			(±0.73)
K0	25.2	26.9	26.2	28.3	26.6
K2	26.3	27.3	26.1	27.4	26.8
K4	25.5	29.4	30.0	24.5	27.4
K8	28.8	26.4	26.9	26.5	27.1
		(±1.03)			(±0.52)
N1	25.0	25.5	24.5	22.5	24.4
N2	27.8	29.6	30.0	30.9	29.6

	K0	K2	K4	K8
		(±1.03)		
N1	23.6	23.9	25.7	24.3
N2	29.7	29.7	29.0	30.0

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.46)		(±1.03)
N1	24.8	23.9	24.3
N2	30.7	31.5	31.1
Mean (±1.03)	27.8	27.7	27.7

* Applied 1965

General mean: 27.1
Mean D.M. %: 19.3

68/C/7.9

PLOT 5/2: DRY MATTER

TOTAL OF 3 CUTS

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±1.00)	80.4	81.1	81.3	78.0	80.2
		(±2.00)			(±1.00)
K0	73.9	78.4	79.3	80.3	78.0
K2	81.6	80.9	83.8	81.6	82.0
K4	78.8	83.5	84.6	76.8	80.9
K8	87.4	81.6	77.5	73.3	80.0
		(±1.42)			(±0.71)
N1	68.2	65.9	67.0	57.7	64.7
N2	92.6	96.3	95.6	98.4	95.7

	K0	K2	K4	K8
		(±1.42)		
N1	62.3	65.6	67.1	63.7
N2	93.6	98.3	94.7	96.2

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±2.00)		(±1.42)
N1	66.7	68.4	67.5
N2	96.6	101.2	98.9
Mean (±1.42)	81.6	84.8	83.2

* Applied 1965

General mean: 80.8
Mean D.M. %: 20.9

68/C/8.1

PARK GRASS MICROPLOTS

(EPG 41 - 80)

Plot 6, 1968, the fourth year

For details of treatments etc., and for previous years' results see 'Results' 65/C/33, 66/C/14 and 67/C/10.

Area of each plot: 0.0045. Area harvested: 0.0021.

In 1968 all plots were cut six times, the N rates being applied to C6 plots in 6 equal amounts and to C3 plots in 3 equal amounts. The total rates, which are cumulative with previous applications, remain the same.

Cultivations, etc.: P,K,Na and Mg fertilisers applied: 18 Dec, 1967. Ground chalk applied at 3 tons: 28 Dec. 'Nitro-Chalk' applied: 18 Mar, 1968. S plots sprayed with mecoprop at 45 oz a.e. in 50 gals: 25 Apr and at 60 oz a.e. in 50 gals: 16 July. Cut six times: 8 May, 6 June, 4 July, 6 Aug, 11 Sept, 30 Oct. 'Nitro-Chalk' applied to C6 plots after first 5 cuts and to C3 plots on 7 June and 6 Aug.

Standard error per plot. Dry matter:
Total of all 6 cuts: 4.42 or 6.5% (27 d.f.)

68/C/8.2

SUMMARY OF RESULTS

DRY MATTER: TOTAL OF ALL CUTS

	N0	SN0	N1	N2	N3	Mean
			(±2.21)			(±0.99)
C3	53.3	25.1	63.6	84.0	96.3	64.5
C6	62.5	28.7	68.2	93.7	103.4	71.3
Mean (±1.56)	57.9	26.9	65.9	88.9	99.9	67.9

Mean D.M. %: 16.6

68/C/9.1

WINTER WHEAT

(BH)

Sod seeding and pests, New Zealand 1968, the fourth year.

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

Area of each sub plot: 0.0227. Area harvested: 0.0152.

Treatments: All combinations of:-

Whole plots: 1. Seedbed preparation: Ploughed 1965, 1966, 1967 and 1968 (M). Ploughed with ioxynil spray 1965, ploughed 1966 and 1967, ploughed with aminotriazole* 1968 (MA). Seeded direct each year, with paraquat 1965 and 1966, aminotriazole* and paraquat** 1967 and 1968 (SAP).

Sub plots: 2. Insecticide spray: None (O), sprayed 1965 with diazinon, 1966 with diazinon and chlordane 1967 with DDT, diazinon and chlordane, and 1968 with DDT, diazinon and chlordane*** (I).

* At 4 lb in 32 gals (with ammonium thiocyanate at 3.7 lb).
** At 2 lb ion in 32 gals.
*** A mixture of DDT at 9.6 lb, diazinon at 2.0 lb and chlordane at 6.7 lb, in 160 gals.

Basal applications: 340 lb (6:15:15), 0.84 cwt N as 'Nitro-Chalk' in spring.
Weedkiller: Mecoprop at 42 oz and 2,4-D at 10.5 oz in 40 gals.

Cultivations, etc.: Aminotriazole, ammonium thiocyanate and paraquat applied: 21 Sept, 1967. M and MA plots ploughed: 12 Oct. Insecticides applied: 23 Oct. Basal NPK compound applied: 24 Oct. M and MA plots spring-tine cultivated, seed drilled at 180 lb: 25 Oct. 'Nitro-Chalk' applied: 11 Apr, 1968. Weedkiller applied: 4 May. Combine harvested: 24 Aug. Variety: Cappelle.

NOTES: (1) Plant counts were made on 8 Apr, 1968.
(2) For previous years' results see 'Results' 65/C/24, 66/C/15, 67/C/11.

Standard errors per plot. Grain:
Whole plot: 2.64 or 10.4% (4 d.f.)
Sub plot: 2.57 or 10.1% (6 d.f.)

SUMMARY OF RESULTS

GRAIN

	M	MA	SAP	Mean
		(1) and (2)		(±0.86)
O	30.3	28.0	18.7	25.7
I	32.0	32.8	11.1	25.3
Mean (±1.53)	31.2	30.4	14.9	25.5

(1) (±1.85) For use in horizontal and diagonal comparisons only
(2) (±1.49) For use in vertical and interaction comparisons only

Mean D.M. %: 84.1

68/C/10.1

INTENSIVE WINTER BARLEY GROWING EXPERIMENT

(BJ)

Hoosfield (Old Four Course) 1968, the fourth year, winter barley.

For details of treatments, etc. see 'Results' 65/C/25 and for previous years' results see 'Results' 65/C/25, 66/C/16 and 67/C/12.

Area of each plot: 0.0386. Area harvested: 0.0257.

The nitrogen rates are now 0.3, 0.6, 0.9 cwt N as 'Nitro-Chalk' to all crop sequences.

The variety is Maris Otter.

Basal applications: Basal fertiliser as previously. Weedkiller: Ioxynil/mecoprop (Actril C at 6 pints in 20 gals).

Cultivations, etc.: Ploughed: 12 Sept, 1967. Seed drilled at 140 lb: 9 Oct. 'Nitro-Chalk' applied: 5 Apr, 1968. Weedkiller applied: 26 Apr. Combine harvested: 30 July.

NOTE: Estimates of Eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in spring and summer.

Standard error per plot.
Grain: 2.06 or 6.2% (22 d.f.)

68/C/10.2

SUMMARY OF RESULTS

GRAIN

Crop 1965 1966 1967	B B B	O B Be	B Be B	Be B O	Mean
		(±1.19)			(±0.60)
N1	25.0	31.6	25.6	23.8	26.5
N2	34.0	36.9	33.1	33.8	34.5
N3	38.3	40.0	36.7	38.8	38.4
Mean (±0.69)	32.4	36.1	31.8	32.1	33.1

Mean D.M. %: 83.9

68/C/11.1

LEGUMES AND BARLEY

(CH)

Effects of crop sequences and green manures - Highfield IV 1968, the second year - barley.

Design: 2 randomised blocks of 12 plots, split into 4.

Area of each sub plot: 0.0121. Area harvested: 0.0064.

Treatments: All combinations of:-

Whole plots:

1. Crop sequences (C):

	1	2	3	4	5	6	7
1967	B	B	O	O	Ra	Cl	Be
Undersown	-	T	-	T	-	-	-
1968	B	B	B	B	B	B	B

With nitrogen in 1967: 0.4 (N1), 0.8 (N2) cwt N as 'Nitro-Chalk' to oats and barley, 0.8 (N2), 1.6 (N4) to oilseed rape, none to beans and clover (N0).

Sub plots:

2. Nitrogen to barley 1968: None (T0), 0.35 (T1), 0.70 (T2), 1.05 (T3) cwt N as 'Nitro-Chalk'.

B = Barley, O = Oats, Ra = Oilseed rape, Cl = Red Clover, Be = Spring beans, T = Trefoil.

Basal applications: 2.5 cwt (0:20:20) combined drilled. Weedkiller: Mecoprop at 36 oz and 2,4-D at 9 oz in 32 gals.

Cultivations, etc.:- Corrective K applied to clover plots at 1.0 cwt K2O as muriate of potash: 22 Nov, 1967. Ploughed: 4 Dec. Seed drilled at 140 lb: 28 Feb, 1968. 'Nitro-Chalk' applied: 15 Mar. Weedkiller applied: 17 May. Combine harvested: 22 Aug. Variety: Maris Badger.

NOTE: (1) Samples were taken on 5 July for estimation of take-all (Ophiobolus graminis) and eyespot (Cercosporella herpotrichoides).

(2) For previous year's results see 'Results' 67/C/27.

Standard errors per plot.

Grain: Whole plot: 1.16 or 3.7% (11 d.f.)

Sub plot: 2.99 or 9.6% (36 d.f.)

SUMMARY OF RESULTS

GRAIN

Crop	1967 Under-sown	N	1968 N0	N1	N2	N3	Mean
			(1) and (2)				(±0.82)
B	-	1	16.6	28.4	34.7	29.6	27.3
B	-	2	18.8	30.0	35.6	33.5	29.5
B	T	1	33.0	35.4	30.7	27.8	31.7
B	T	2	32.2	35.2	33.1	32.5	33.3
O	-	1	25.0	32.9	34.4	30.1	30.6
O	-	2	23.4	35.2	35.8	29.6	31.0
O	T	1	31.1	36.7	32.3	29.1	32.3
O	T	2	28.4	36.1	30.5	28.7	30.9
Ra	-	2	23.9	36.1	35.8	30.5	31.6
Ra	-	4	29.7	38.6	33.8	27.8	32.5
Cl	-		37.2	29.4	29.2	28.1	30.9
Be	-		28.1	37.0	33.3	29.5	32.0
Mean (±0.61)			27.3	34.2	33.3	29.7	31.1

(1) (±2.01) For use in vertical and diagonal comparisons only
(2) (±2.12) For use in horizontal and interaction comparisons only

Mean D.M. %: 86.6

68/C/12.1

PREVIOUS CROPS X N FOR BARLEY 1966 - 68

(BY)

The effect of previous cropping and nitrogen on the yield of barley - Fosters Corner 1968, the third year - barley.

Design: A single replicate of 3 x 3 x 3 x 3 in 3 blocks of 9 plots, split for N in 1967 and 1968, with split plot confounding and a component of the 4 factor interaction confounded with blocks. Whole plot randomisation restricted.

Area of each sub plot: 0.0107. Area harvested: 0.0063.

Treatments: All combinations of:-

Whole plots (applied 1966):-

1. Cropping: Spring wheat (W), Kale (K), Italian Ryegrass (G).
2. Nitrogen: None (Q0), 1.0 (Q2), 2.0 (Q4) cwt N as 'Nitro-Chalk'.

Sub plots (applied to barley 1967 and 1968):-

3. 1967 Nitrogen: None (R0), 0.5 (R1), 1.0 (R2) N as 'Nitro-Chalk'.
4. 1968 Nitrogen: None (N0), 0.5 (N1), 1.0 (N2) N as 'Nitro-Chalk'.

Basal applications: 2.5 cwt (0:20:20) combine drilled.

Cultivations, etc.: Ploughed: 18 Sept, 1967. Seed drilled at 145 lb, 'Nitro-Chalk' applied: 29 Feb, 1968. Combine harvested: 22 July. Variety: Maris Badger.

NOTES: (1) For previous years' results see 'Results' 66/C/19 and 67/C/15.
(2) Samples of grain were taken at harvest for determination of percentage N.

Standard errors per plot. Grain:
Whole plot: 2.34 or 8.5% (16 d.f.)
Sub plot: 5.39 or 19.6% (40 d.f.)

68/C/12.2

SUMMARY OF RESULTS

GRAIN

Crop in 1966	N 1966 Q0	Q2	Q4	N 1967 R0	R1	R2	N 1968 N0	N1	N2	Mean
	(±1.35)			(1) and (2)			(1) and (2)			(±0.78)
W	24.9	27.8	26.6	27.4	25.3	26.6	29.0	25.2	25.1	26.4
K	28.0	26.9	29.1	27.0	30.4	26.6	33.6	26.7	23.7	28.0
G	28.3	27.7	28.8	31.0	29.9	23.9	36.4	26.3	22.2	28.3
				(1) and (2)			(1) and (2)			
		Q0		27.1	28.6	25.5	32.2	26.0	22.9	27.1
		Q2		30.1	27.5	24.8	32.2	26.8	23.4	27.5
		Q4		28.2	29.4	26.9	34.5	25.3	24.7	28.2
							(±1.80)			(±1.04)
					R0		34.9	28.3	22.2	28.5
					R1		33.0	26.2	26.3	28.5
					R2		31.1	23.7	22.4	25.7
Mean (±1.04)							33.0	26.0	23.7	27.6

(1) (±1.66) For use in vertical and diagonal comparisons
(2) (±1.80) For use in horizontal and interaction comparisons

Mean D.M. %: 86.4

68/C/13.1

RYEGRASS AFTER BARLEY

(ER)

The rate of action of P fertilisers, Delharding 1968, the third year. For treatments etc. and previous years' results see 'Results' 66/C/21, 67/C/17.

Area of each plot: 0.0018. Area harvested: 0.0007.

No treatments were applied to the ryegrass (sown in July 1967), which was used to measure the residual effects of the treatments applied to potatoes in 1966 and barley in 1967.

Basal applications: To ryegrass: 84 lb N and 45 lb K (25:0:16).

Cultivations, etc.: Basal NK applied: 1 Mar, 1968. Cut once: 16 May.

Standard error per plot. Dry matter:
1st and only cut: 2.21 or 6.6% (60 d.f.)

SUMMARY OF RESULTS

1ST AND ONLY CUT: DRY MATTER

	O	S	K	SK	M	SM	KM	SKM	Mean
Mean (±0.64)	25.9	33.3	35.3	35.1	33.2	34.5	34.5	34.9	33.3
				(±0.90)					(±0.34)
I1		31.6	31.3	31.5	30.7	31.5	31.9	32.6	31.6
I2		34.9	39.2	38.8	35.6	37.4	37.2	37.1	37.2
P		33.8	34.1	34.1	30.9	34.0	33.4	34.2	33.5
G		32.7	36.4	36.1	35.5	34.9	35.7	35.6	35.3

Mean D.M. %: 14.2

68/C/14.1

WINTER WHEAT

(EBR, EBS)

Effects of formalin and nitrogen, Pastures (pathogen free 1965), and Little Knott I (pathogen infected 1965) 1968, the fourth year.

Design (each field): 4 x 2 x 2 x 2 x 2 x 2 (quarter replicate) confounded design in 2 blocks of 8 plots split into 2 (Pastures) and in 4 blocks of 8 plots (Little Knott I).

Area of each plot:
Little Knott I: 0.0032. Area harvested: 0.0023.
Pastures (sub plot): 0.0016. Area harvested: 0.0011.

Treatments: All combinations of:-

Whole plots: (Pastures)
1. N: None (N0), 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt applied as 'Nitro-Chalk' in 1965, 1966 and 1967 and as calcium nitrate in 1968.

Sub plots: (Pastures)
2. Formalin applied 1965: (65 O) and (65 F).
3. Formalin applied 1966: (66 O) and (66 F).
4. Formalin applied 1967: (67 O) and (67 F).
5. Time of application (1967): To wheat stubble (E), after cultivations (L).
6. Formalin applied 1968: None (68 O), sprayed with a 38% solution of formaldehyde at 266 gals in 4220 gals (68 F).

On Little Knott I the treatments were the same, but applied to whole plots only.

Basal applications: 560 lb (0:20:20). Weedkiller: Ioxynil at 9 oz and mecoprop at 27 oz in 50 gals.

Cultivations, etc.:
Pastures: Ploughed: 18 Sept, 1967. Basal PK compound applied: 25 Sept. Formalin applied: 26 Sept. Plots rotary cultivated, seed sown at 180 lb: 24 Oct. Calcium nitrate (first half dressing) applied: 25 Mar, 1968. Weedkiller applied, calcium nitrate (second half dressing) applied: 25 Apr. Combine harvested: 30 Aug. Variety: Cappelle.

Little Knott I: Ploughed: 18 Sept, 1967. Basal PK compound applied, formalin applied: 25 Sept. Plots rotary cultivated, seed sown at 180 lb: 24 Oct. Calcium nitrate (first half dressing) applied: 25 Mar, 1968. Weedkiller applied, calcium nitrate (second half dressing) applied: 25 Apr. Combine harvested: 26 Aug. Variety: Cappelle.

NOTES: (1) Samples of grain and straw were taken at harvest for determination of N.
(2) For previous years' results see 'Results' 65/C/29, 66/C/22, 67/C/18.
(3) Factor 5 has been ignored in the analysis.

Standard errors per plot. Grain:
Pastures (R): Pooled Whole and sub plot: 2.78 or 11.2% (8 d.f.)
Little Knott (R): 4.59 or 14.4% (6 d.f.)

SUMMARY OF RESULTS

PASTURES (R)

	N0	N1	N2	N3	Mean
		GRAIN			
Mean (±0.98)	25.9	27.7	23.6	22.1	24.8
		(±1.39)			(±0.69)
68 O	28.4	31.0	25.1	23.8	27.1
68 F	23.3	24.3	22.1	20.3	22.5
		(±1.39)			(±0.69)
67 O	24.3	27.5	23.1	23.7	24.7
67 F	27.5	27.8	24.1	20.5	25.0
		(±1.39)			(±0.69)
66 O	26.2	27.3	23.7	22.2	24.8
66 F	25.6	28.0	23.5	22.0	24.8
		(±1.39)			(±0.69)
65 O	27.5	27.2	22.5	21.3	24.6
65 F	24.3	28.2	24.7	22.9	25.0
		STRAW			
Mean	30.8	41.9	41.6	37.3	37.9
68 O	32.2	42.5	41.2	36.4	38.1
68 F	29.4	41.2	42.1	38.3	37.7
67 O	33.9	44.0	43.1	35.9	39.2
67 F	27.6	39.7	40.2	38.8	36.6
66 O	31.7	40.7	41.3	36.5	37.6
66 F	29.8	43.0	42.0	38.2	38.2
65 O	31.5	41.8	40.2	34.9	37.1
65 F	30.0	41.9	43.1	39.8	38.7

Mean D.M. %: Grain: 70.2
Straw: 69.6

68/C/14.4

LITTLE KNOTT I

	N0	N1	N2	N3	Mean
		GRAIN			
Mean (±1.62)	19.3	34.9	37.0	35.8	31.8
		(±2.29)			(±1.15)
68 O	18.9	33.1	35.5	37.1	31.1
68 F	19.8	36.8	38.4	34.5	32.4
		(±2.29)			(±1.15)
67 O	20.8	34.8	38.6	34.5	32.2
67 F	17.8	35.0	35.3	37.2	31.3
		(±2.29)			(±1.15)
66 O	19.2	31.4	35.0	34.8	30.1
66 F	19.4	38.5	38.9	36.8	33.4
		(±2.29)			(±1.15)
65 O	20.8	33.2	35.2	34.9	31.0
65 F	17.8	36.7	38.7	36.7	32.5
		STRAW			
Mean	20.1	36.6	40.7	39.7	34.3
68 O	20.9	33.5	36.9	40.4	32.9
68 F	19.4	39.6	44.5	39.0	35.6
67 O	23.3	38.1	45.4	39.6	36.6
67 F	16.9	35.1	36.0	39.7	31.9
66 O	20.3	32.2	38.0	39.8	32.6
66 F	20.0	40.9	43.4	39.5	35.9
65 O	22.3	37.0	41.6	36.1	34.2
65 F	18.0	36.2	39.8	43.3	34.3

Mean D.M. %: Grain: 86.2
Straw: 69.8

68/C/25.8

DRY MATTER

	O	I	E	G	Mean
	STACKYARD C (W)				
	2ND CUT				
Mean (±0.57)	24.5	23.3	25.2	20.1	23.3
	(1) and (2)				(±0.48)
U	23.1	21.7	23.5	19.8	22.0
M	25.8	24.8	26.9	20.4	24.5
	(3) and (4)				(±0.67)
N0	23.1	21.1	23.6	3.9	17.9
N1	25.8	23.7	25.2	19.6	23.6
N2	23.1	24.6	26.2	28.2	25.5
N3	25.9	23.7	25.8	28.7	26.0

Mean D.M. %: 20.5

(1) (±0.88) (3) (±1.30) For use in horizontal and diagonal comparisons only

(2) (±0.95) (4) (±1.35) For use in vertical and interaction comparisons only

68/C/25.7

DRY MATTER

	O	I	E	G	Mean
	STACKYARD C (W)				
	1ST CUT				
Mean (±1.60)	26.3	23.1	26.7	24.5	25.2
	(1) and (2)				(±0.80)
U	25.0	20.6	25.1	24.4	23.8
M	27.7	25.7	28.2	24.7	26.5
	(3) and (4)				(±1.14)
N0	25.2	20.1	26.1	2.6	18.5
N1	30.3	24.6	28.7	21.1	26.2
N2	24.8	26.3	29.5	34.6	28.8
N3	25.0	21.4	22.4	39.9	27.2

Mean D.M. %: 18.2

(1) (±1.96) (3) (±2.54) For use in horizontal and diagonal comparisons only

(2) (±1.61) (4) (±2.27) For use in vertical and interaction comparisons only

68/C/25.6

DRY MATTER

	O	I	E	G	Mean
		STACKYARD (R)			
		TOTAL OF 4 CUTS			
Mean (±2.18)	77.8	68.9	81.2	74.8	75.7
		(1) and (2)			(±1.35)
U	66.1	58.2	72.5	71.9	67.2
M	89.5	79.6	89.8	77.7	84.1
		(3) and (4)			(±1.91)
NO	72.5	53.1	74.9	25.9	56.6
N1	71.0	71.3	82.0	69.0	73.3
N2	84.1	79.4	83.3	98.4	86.3
N3	83.5	71.9	84.5	105.8	86.4

Mean D.M. %: 19.4

(1) (±2.90) (3) (±3.96) For use in horizontal and diagonal comparisons only

(2) (±2.70) (4) (±3.82) For use in vertical and interaction comparisons only

68/C/25.5

DRY MATTER

	O	I	E	G	Mean
		STACKYARD (R)			
		4TH CUT			
Mean (±0.32)	11.2	10.6	10.8	9.3	10.5
		(1) and (2)			(±0.26)
U	9.0	8.0	8.8	8.1	8.5
M	13.4	13.2	12.7	10.5	12.4
		(3) and (4)			(±0.36)
N0	9.5	8.1	9.4	3.0	7.5
N1	10.0	10.7	12.1	8.2	10.3
N2	12.3	12.7	10.2	13.1	12.1
N3	12.9	10.8	11.3	12.8	12.0

Mean D.M. %: 19.1

(1) (±0.48) (3) (±0.71) For use in horizontal and diagonal comparisons only

(2) (±0.51) (4) (±0.73) For use in vertical and interaction comparisons only

68/C/25.4

DRY MATTER

	O	I	E	G	Mean
		STACKYARD (R)			
		3RD CUT			
Mean (±0.45)	18.5	17.2	19.0	12.0	16.7
		(1) and (2)			(±0.28)
U	16.2	14.8	16.9	10.7	14.7
M	20.9	19.6	21.0	13.3	18.7
		(3) and (4)			(±0.40)
N0	17.9	14.8	18.1	3.2	13.5
N1	17.4	18.3	19.2	10.5	16.3
N2	20.4	19.1	18.3	15.5	18.3
N3	18.5	16.7	20.3	18.9	18.6

Mean D.M. %: 18.5

(1) (±0.60) (3) (±0.82) For use in horizontal and diagonal comparisons only

(2) (±0.56) (4) (±0.80) For use in vertical and interaction comparisons only

68/C/25.3

DRY MATTER

	O	I	E	G	Mean
		STACKYARD (R)			
		2ND CUT			
Mean (±0.49)	26.4	23.1	27.1	24.1	25.2
		(1) and (2)			(±0.69)
U	23.1	20.1	24.8	24.6	23.1
M	29.7	26.2	29.4	23.7	27.3
		(3) and (4)			(±0.98)
N0	26.5	18.9	25.8	9.4	20.1
N1	24.0	24.7	27.0	23.2	24.7
N2	27.1	26.5	27.7	32.1	28.3
N3	28.0	22.5	28.1	31.8	27.6

Mean D.M. %: 21.7

(1) (±1.09) (3) (±1.77) For use in horizontal and diagonal comparisons only

(2) (±1.39) (4) (±1.96) For use in vertical and interaction comparisons only

68/C/25.2

SUMMARY OF RESULTS

DRY MATTER

	O	I	E	G	Mean
	STACKYARD (R)				
	1ST CUT				
Mean (±1.12)	21.7	17.9	24.3	29.3	23.3
	(1) and (2)				(±0.50)
U	17.8	15.2	22.0	28.5	20.9
M	25.5	20.6	26.6	30.2	25.7
	(3) and (4)				(±0.70)
N0	18.6	11.2	21.7	10.2	15.4
N1	19.6	17.5	23.7	27.1	22.0
N2	24.3	21.1	27.1	37.8	27.6
N3	24.0	21.8	24.7	42.3	28.2

Mean D.M. %: 18.1

(1) (±1.32) (3) (±1.65) For use in horizontal and diagonal comparisons only

(2) (±0.99) (4) (±1.40) For use in vertical and interaction comparisons only

68/C/25.1

N FIXATION - LUCERNE AND GRASS

(EAT and WEAQ)

Nitrogen fixation by lucerne - Rothamsted (R) Stackyard and Woburn (W) Stackyard C 1968, the second year. For treatments etc. and for the previous year's results see 'Results' 67/C/33.

In 1968 the nitrogen treatments were none (N0), 30 (N1), 60 (N2), 90 (N3) lb N as 'Nitro-Chalk' applied for every cut.

Cultivations, etc.:-

Stackyard (R): PK and first 'Nitro-Chalk' dressings applied: 22 Mar, 1968. Cut 4 times: 15 May, 2 July, 12 Aug and 30 Sept. 'Nitro-Chalk' applied after first 3 cuts.

Stackyard C (W): PK and first 'Nitro-Chalk' dressings applied: 25 Mar, 1968. Cut twice: 20 May, 3 July. 'Nitro-Chalk' applied after each cut.

NOTES: (1) An error was made in applying the N dressings after the second cut on Stackyard C (W) and the experiment was therefore discontinued.

(2) Soil samples were taken on 2 Feb, 1968 for counts of Rhizobium leguminosarum.

Standard errors per plot. Dry matter:

Stackyard (R):	1st cut:	Whole plot:	4.49 or 19.3% (6 d.f.)
		Sub plot:	2.81 or 12.0% (24 d.f.)
	2nd cut:	Whole plot:	1.95 or 7.8% (6 d.f.)
		Sub plot:	3.92 or 15.6% (24 d.f.)
	3rd cut:	Whole plot:	1.80 or 10.8% (6 d.f.)
		Sub plot:	1.59 or 9.5% (24 d.f.)
	4th cut:	Whole plot:	1.26 or 12.1% (6 d.f.)
		Sub plot:	1.46 or 13.9% (24 d.f.)
	Total of 4 cuts:	Whole plot:	8.71 or 11.5% (6 d.f.)
		Sub plot:	7.65 or 10.1% (24 d.f.)
Stackyard C (W):			
	1st cut:	Whole plot:	3.21 or 12.7% (6 d.f.)
		Sub plot:	4.54 or 18.0% (24 d.f.)
	2nd cut:	Whole plot	1.13 or 4.9% (6 d.f.)
		Sub plot:	2.70 or 11.6% (24 d.f.)
	Total of 2 cuts:	Whole plot:	3.99 or 8.2% (6 d.f.)
		Sub plot:	6.93 or 14.3% (24 d.f.)

68/c/24.4

DRY MATTER

	O	A	P	S	M	L	Mean
			TOTAL OF 2 CUTS				
				(±1.80)			(±0.81)
N1		11.6	14.5	17.4	17.9	22.9	16.9
N2		13.3	18.2	23.2	25.0	34.1	22.7
N3		17.3	26.1	27.0	39.9	43.1	30.7
Mean (±1.04)	11.1	14.0	19.6	22.5	27.6	33.4	21.4*

* General mean

Mean D.M. %: 25.6

68/c/24.3

SUMMARY OF RESULTS

DRY MATTER

	O	A	P	S	M	L	Mean
			FOSTERS O AND E I				
			1ST CUT				
				(±1.62)			(±0.72)
N1		4.7	6.8	9.4	9.7	14.1	8.9
N2		5.4	10.0	14.8	16.8	23.5	14.1
N3		9.3	16.7	18.6	28.9	30.1	20.7
Mean (±0.94)	4.2	6.5	11.2	14.3	18.5	22.6	12.9*
			2ND CUT				
				(±0.35)			(±0.16)
N1		6.8	7.7	8.0	8.3	8.8	7.9
N2		7.8	8.2	8.3	8.1	10.6	8.6
N3		8.0	9.4	8.3	10.9	12.9	9.9
Mean (±0.20)	6.9	7.6	8.4	8.2	9.1	10.8	8.5*

* General mean

Mean D.M. %: 1st cut: 25.1
2nd cut: 26.2

Standard errors per plot. Dry Matter:

Fosters O and E I (R):

1st cut:	2.81 or 21.8%	(34 d.f.)
2nd cut:	0.61 or 7.2%	(34 d.f.)
Total of 2 cuts:	3.12 or 14.6%	(34 d.f.)

Stackyard B (W):

1st cut:	2.04 or 7.9%	(34 d.f.)
2nd cut:	2.19 or 9.9%	(34 d.f.)
3rd cut:	1.46 or 14.1%	(34 d.f.)
Total of 3 cuts:	3.93 or 6.8%	(34 d.f.)

GRASS

(EAB and WEAR)

The effect of granule size on the rate of release of N from IBDU (Iso-butylidene di-urea), Rothamsted (R) Fosters O and E I the second year, and Woburn (W) Stackyard Field, the first year, 1968.

Design (each field): 3 randomised blocks of 18 plots.

Area of each plot: Fosters O and E I: 0.0009. Area harvested: 0.0006.
Stackyard (W): 0.0014. Area harvested: 0.0008.

Treatments*: None (O), (3 plots per block) and all combinations of:-

1. N fertiliser:

Ammonium nitrate (prilled)	A
IBDU powder	P
IBDU, small granules (0.5 - 0.8 mm)	S
IBDU, medium granules (0.8 - 1.5 mm)	M
IBDU, large granules (1.5 - 2.4 mm)	L

2. Levels of N: 100 lb (N1), 200 lb (N2), 300 lb (N3)

* Applied 1967 on Fosters O and E I (R) and 1968 on Stackyard Field (W).

Basal applications: 4 cwt (0:14:28). Weedkiller to Stackyard Field (W): Ioxynil at 6 oz and mecoprop at 18 oz in 50 gals.

Cultivations, etc.:

Fosters O and E I (R): Basal PK compound applied: 25 Mar, 1968. Cut twice: 2 May and 13 June.

Stackyard Field (W): Subsoiled: 11 July, 1967. Ploughed: 11 Oct. Fertilisers applied, seed drilled at 30 lbs: 19 Mar, 1968. Weedkiller applied: 17 May. Cut 3 times: 18 June, 5 Aug, 1 Oct. Variety: S22 Italian Ryegrass. Previous crops: Long term fallow.

NOTES: (1) % N in grass was determined and N uptakes calculated.
(2) For the previous year's results see 'Results' 67/C/32.

68/C/23.2

SUMMARY OF RESULTS

DRY MATTER

	N0	N1	N2	N3	Mean
		1ST CUT			
		(±0.63)			(±0.31)
O	5.0	22.7	36.6	40.9	26.3
F	6.0	27.6	37.2	43.2	28.5
Mean (±0.44)	5.5	25.2	36.9	42.1	27.4
		2ND CUT			
		(±0.63)			(±0.31)
O	6.8	19.4	23.3	20.8	17.6
F	7.6	21.5	23.9	21.2	18.6
Mean (±0.44)	7.2	20.4	23.6	21.0	18.1
		TOTAL OF 2 CUTS			
		(±0.99)			(±0.50)
O	11.8	42.1	59.8	61.8	43.9
F	13.6	49.1	61.1	64.4	47.1
Mean (±0.70)	12.7	45.6	60.5	63.1	45.5

Mean D.M. %: 1st cut: 19.8
2nd cut: 27.1
Total of 2 cuts: 23.5

68/C/23.1

GRASS

(EAA)

Effects of formalin and nitrogen, Fosters O and E I, 1968 the second year.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0017. Area harvested: 0.0010.

Treatments: All combinations of:-
1. Formalin (applied 1967): None (O), sprayed with 38% solution of formaldehyde at 532 gals in 3630 gals (F).
2. Nitrogen (cumulative with 1967 dressings): None (N0), 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N as calcium nitrate per cut.

Basal applications: 8 cwt (0:14:28) in spring.

Cultivations, etc.: Basal PK and first N dressings applied: 25 Mar, 1968. Cut twice: 21 May and 8 July. Calcium nitrate applied after first cut.

NOTE: For the previous year's results see 'Results' 67/C/31.

Standard errors per plot. Dry matter:

1st cut:	1.26 or 4.6% (21 d.f.)
2nd cut:	1.25 or 6.9% (21 d.f.)
Total of 2 cuts:	1.99 or 4.4% (21 d.f.)

68/C/22.2

SUMMARY OF RESULTS

GRAIN

Treatment 1967 1968	O O	O F	F O	F F	R R	R Z	Z R	Z Z	D O	D D	Mean
					(±1.36)						±0.43)
NO	33.1	35.6	34.0	33.7	33.6	37.7	31.0	35.7	34.3	21.0	33.0
N1	32.5	31.6	28.9	27.8	32.6	30.0	30.5	29.8	31.2	16.5	29.1
Mean (±0.96)	32.8	33.6	31.5	30.8	33.1	33.8	30.7	32.8	32.7	18.7	31.1

Mean D.M. %: 82.1

68/C/22.1

WINTER WHEAT

(DA)

Soil sterilants, Claycroft 1968, the second year.

Design: 2 replicates of 10 x 2 in 4 blocks of 10 plots.

Area of each plot: 0.0030. Area harvested: 0.0016.

Treatments: All combinations of:-

1. Treatment sequences (soil sterilants):-

1967	O	O	F	F	R	R	Z	Z	D	D
1968	O	F	O	F	R	Z	R	Z	O	D

where O = No sterilant, not rotary cultivated.
R = No sterilant, rotary cultivated.
D = D-D at 800 lb injected.
Z = Dazomet at 400 lb rotary cultivated in.
F = Formalin drench at 266* gals of formalin in 9680 gals.

2. Nitrogen (cumulative 1967, 1968): None (N0), 1.0 (N1) cwt N as 'Nitro-Chalk'.

Basal applications: 2.5 cwt (0:20:20) combine drilled.

Cultivations, etc.: Ploughed: 13 Sept, 1967. Dazomet applied and rotary cultivated in, R plots rotary cultivated, formalin drench applied: 5 Oct. D-D applied: 9 Oct. Seed drilled at 180 lb: 23 Nov. 'Nitro-Chalk' applied: 11 Apr, 1968. Combine harvested: 24 Aug. Variety: Cappelle.

NOTE: (1) Plant samples were taken for disease counts.
(2) Many plants on plots treated with D-D in 1968 had deformed ears. No abnormal ears were seen on other plots.
(3) For the previous year's results see 'Results' 67/C/29.

Standard error per plot.
Grain: 1.93 or 6.2% (18 d.f.)

* 372 gals in 1967

68/C/21.3

GRAIN

BROADMEAD II (W)

	R0	R2	R4	R6	N0	N1	N2	N3	Mean
	(±1.57)				(1) and (2)				(±0.79)
B	32.8	33.3	32.9	32.1	35.3	32.6	32.4	30.8	32.8
C	33.8	31.5	33.5	30.9	34.8	32.7	32.4	29.9	32.4
					(3) and (4)				(±1.11)
			R0		35.3	33.5	33.9	30.5	33.3
			R2		35.6	31.1	32.5	30.4	32.4
			R4		35.7	33.4	32.8	30.9	33.2
			R6		33.6	32.5	30.3	29.5	31.5
			Mean (±0.46)		35.0	32.6	32.4	30.3	32.6

(1) (±0.97) (3) (±1.37) For use in vertical and diagonal comparisons
(2) (±0.65) (4) (±0.92) For use in horizontal and interaction comparisons

Mean D.M. %: 84.5

68/C/21.2

SUMMARY OF RESULTS

GRAIN

PASTURES (R)

	R0	R2	R4	R6	N0	N1	N2	N3	Mean
	(±0.69)				(1) and (2)				(±0.34)
B	41.2	43.3	43.6	42.5	38.0	43.5	45.8	43.4	42.7
C	42.1	40.3	43.7	44.2	36.5	45.1	45.1	43.7	42.6
					(3) and (4)				(±0.49)
			R0		32.8	43.9	46.3	43.6	41.6
			R2		34.0	42.6	46.2	44.4	41.8
			R4		39.2	46.4	45.1	43.8	43.6
			R6		42.8	44.2	44.2	42.3	43.4
			Mean (±0.54)		37.2	44.3	45.5	43.5	42.6

(1) (±0.75) (3) (±1.06) For use in vertical and diagonal comparisons
(2) (±0.76) (4) (±1.08) For use in horizontal and interaction comparisons

Mean D.M. %: 82.6

68/C/21.1

EFFECT OF POTATO HAULM ON WINTER WHEAT

(CK and WCN)

Rothamsted (R) Pastures and Woburn (W) Broadmead II 1968 the second year (winter wheat).

Design: 4 randomised blocks of 8 plots, split for N with split plot confounding.

Area of each sub plot:
Pastures (R): 0.0076. Area harvested: 0.0050.
Broadmead II (W): 0.0074. Area harvested: 0.0049.

Treatments: All combinations of:-
Whole plots: 1. Nitrogen to potatoes 1967: None (R0), 0.66 (R2) 1.32 (R4), 2.0 (R6) as 'Nitro-Chalk'.
2. Haulm disposal: Haulm burnt off with acid (B), haulm cut and removed (C).
Half plots: 3. Nitrogen to wheat 1968: None (N0), 0.33 (N1), 0.66 (N2), 1.0 cwt (N3) as 'Nitro-Chalk'.

Basal applications: Pastures (R): 340 lb (0:14:28) combine drilled, 5 tons ground chalk. Weedkiller: Ioxynil/mecoprop (Actril C at 6 pints in 20 gals).
Broadmead II (W): 300 lb (0:14:28) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 6 pints in 25 gals).

Cultivations, etc.:
Pastures (R): Ploughed, haulm ploughed in on B plots: 22 Sept, 1967.
Chalk applied: 10 Oct. Seed drilled at 170 lb: 24 Oct.
'Nitro-Chalk' applied: half - 25 Mar, 1968, half - 26 Apr.
Weedkiller applied: 26 Apr. Combine harvested: 24 Aug.
Variety: Cappelle.
Broadmead II (W): Haulm ploughed in on B plots: 19 Sept, 1967.
Disced three times: 7 Oct. Seed drilled at 180 lb: 13 Oct.
'Nitro-Chalk' applied: half - 26 Mar, 1968, half - 1 May.
Weedkiller applied: 25 Apr. Combine harvested: 22 Aug.
Variety: Cappelle.

NOTE: For the previous year's results see 'Results' 67/C/28.

Standard errors per plot.

Grain:	Pastures (R):	Whole plot:	1.38 or 3.2% (14 d.f.)
		Sub plot:	2.16 or 5.1% (16 d.f.)
	Broadmead (W):	Whole plot:	3.15 or 9.7% (14 d.f.)
		Sub plot:	1.84 or 5.6% (16 d.f.)

68/C/20.2

SUMMARY OF RESULTS

GRAIN

	SO	SI	DO	DD	Mean
	(±1.75)		(1) and (2)		(±1.24)
S	29.0	30.6	27.1	32.5	29.8
M	29.5	27.1	28.6	28.0	28.3
			(1) and (2)		(±1.24)
SO			27.7	30.8	29.2
SI			27.9	29.8	28.9
Mean (±1.74)			27.8	30.3	29.0

(1) (±2.13) For use in vertical and diagonal comparisons only
(2) (±2.46) For use in horizontal and interaction comparisons only

	S		M	
	DO	DD	DO	DD
	(3) and (4)			
SO	25.3	32.6	30.1	28.9
SI	28.8	32.4	27.1	27.2

(3) (±3.01) For use in comparisons involving different whole plot combinations
(4) (±3.47) For use in interaction comparison and comparisons within the same whole plot combination.

Mean D.M. %: 85.6

68/C/20.1

WINTER WHEAT

(WBW)

Direct seeding, Woburn White Horse Field 1968, the third year.

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

Area of each sub plot: 0.0149. Area harvested: 0.0065.

Treatments: All combinations of:-

Whole plots: 1. Seedbed preparation: Direct seeding after paraquat at 1 lb ion in 33 gals, 21 Sept, 1967 (S). Normal cultivations (M).

2. Seed dressing: No insecticide, fungicide only, (SO), combined insecticide fungicide (SI).

Sub plots: 3. Insecticide spray: None (DO), diazinon at 1.6 lb a.i. plus chlordane 1.75 lb a.i. plus DDT at 6.4 lb a.i. plus zinophos at 3.7 lb a.i. in 50 gals (DD).

NOTE: Treatments in 1966, 1967 and 1968 are cumulative.

Basal applications: 45 cwt Magnesian limestone, 5 cwt (0:14:28) broadcast. 0.8 cwt N as 'Nitro-Chalk' top dressed. Weedkiller: Mecoprop at 1.88 lb a.e. in 25 gals.

Cultivations, etc.: 'M' plots ploughed: 20 Sept, 1967. 'S' plots sprayed with paraquat: 21 Sept. Magnesian limestone applied: 12 Oct. PK broadcast: 23 Oct. Insecticide applied, seed drilled at 190 lb, 'S' plots only harrowed: 24 Oct. 'Nitro-Chalk' applied: 22 Apr, 1968. Weedkiller applied: 25 Apr. Combine harvested: 26 Aug. Variety: Cappelle.

NOTES: (1) For the previous years' results see 'Results' 66/C/33 and 67/C/26.

(2) Counts of soil fauna were made in April and plant samples were taken in July for counts of damage to tillers.

Standard errors per plot. Grain:

Whole plot: 3.49 or 12.0% (9 d.f.)

Sub plot: 6.94 or 23.9% (12 d.f.)

SERIES IV

1966 1967 1968	MP MP MP	MP PD MP	PD PD PD	PD MP PD	Mean
		TOTAL TUBERS			
		(±0.655)			(±0.327)
O C	15.71 16.10	14.39 14.51	3.73 4.21	11.78 12.69	11.40 11.88
O F	15.29 16.52	13.34 15.56	1.76 6.18	10.58 13.89	10.24 13.04
Mean (±0.463)	15.90	14.45	3.97	12.23	11.64
		% WARE			
O C	95.1 94.3	95.1 94.1	75.4 76.1	93.9 94.6	89.9 89.8
O F	93.7 95.7	94.0 95.2	66.8 84.8	93.1 95.4	86.9 92.8
Mean	94.7	94.6	75.8	94.3	89.8

Varieties MP = Maris Piper (resistant)
PD = Pentland Dell (susceptible)

68/C/19.2

SUMMARY OF RESULTS

SERIES I

1966 1967 1968	MP MP MP	MP PD MP	PD PD PD	PD MP PD	Mean
		TOTAL TUBERS			
		(±0.596)			(±0.298)
O C	13.95 13.41	12.36 12.03	5.38 4.68	8.10 8.65	9.95 9.69
O F	12.60 14.76	10.22 14.16	2.53 7.54	4.70 12.05	7.51 12.13
Mean (±0.422)	13.68	12.19	5.03	8.37	9.82
		% WARE			
O C	93.7 92.1	95.6 95.1	74.3 75.5	84.2 85.8	86.9 87.1
O F	91.8 94.0	94.7 95.9	63.0 86.8	75.7 94.2	81.3 92.7
Mean	92.9	95.3	74.9	85.0	87.0

Varieties MP = Maris Piper (resistant)
PD = Pentland Dell (susceptible)

68/C/19.1

IRRIGATION AND EELWORM

(WCE)

Butt Close Woburn, the third year - potatoes, 1968

Effects on yield and cyst nematode of soil fumigant and irrigation and of sequences of resistant and susceptible varieties of potatoes.

For details of treatments etc. and previous years' results see 'Results' 66/C/32 and 67/C/25. Irrigation and fumigant treatments are cumulative.

Area of each sub plot: 0.0114. Area harvested: 0.0068.

Irrigation (C) 1968 (inches water)

Series I		Series IV	
21 June	0.50	21 June	0.50
5 July	0.50	4 July	0.50
9 July	0.75	1 Aug	0.50
2 Aug	0.50		
Total	2.25		1.50

Basal applications: 9 cwt (13:13:20). Weedkiller: Linuron at 0.5 lb plus paraquat 0.37 lb in 50 gals. Fungicide: Mancozeb at 1.2 lb in 38 gals, on three occasions. Magnesian limestone at 22.5 cwt.

Cultivations, etc.: Subsoiled (Series I): 25 Sept, 1967, (Series IV): 23 Sept. Ploughed: 25 Sept. DD injected at 400 lb: 24 Oct. Magnesian limestone applied: 8 Nov. Fertiliser applied: 18 Mar, 1968. Rotary cultivated, potatoes planted (Series I): 1 Apr, (Series IV): 4 Apr. Weedkiller applied: 2 May. Ridged, Maris Piper: 31 May, Pentland Dell: 13 June. Fungicide applied: 12 July, 18 July, 30 July. Sprayed with undiluted BOV at 15 gals: 2 Aug. Lifted: 1 Oct.

NOTE: Soil samples were taken from each plot after fumigation and before cropping. Cyst and egg counts were made.

Standard errors per plot, (pooled). Total tubers:
Series I: 1.460 or 14.9% (30 d.f.)
Series IV: 1.604 or 13.8% (30 d.f.)

68/c/18.3

LEY: DRY MATTER

LC	LN
1ST CUT	
23.1	26.8
2ND CUT	
16.5	25.2
TOTAL OF 2 CUTS	
39.6	52.0

Mean D.M. %: 1st cut: 21.7
2nd cut: 21.4
Total of 2 cuts: 21.4

SUMMARY OF RESULTS

WINTER WHEAT

	N0	N1	N2	N3	Mean
		GRAIN			
		(1) and (2)			(±1.09)
DG	30.3	39.8	39.0	35.6	36.2
ST	20.5	31.2	36.4	38.2	31.6
PT	21.1	30.4	36.5	37.5	31.4
GM	25.5	37.7	36.0	35.5	33.7
FD	20.6	33.4	37.5	36.8	32.1
FS	21.0	31.6	37.0	38.4	32.0
Mean (±0.57)	23.2	34.0	37.1	37.0	32.8

(1) (±1.63) For use in vertical and diagonal comparisons only
(2) (±1.39) For use in horizontal and interaction comparisons only

STRAW

DG	32.9	44.3	46.8	49.9	43.5
ST	21.9	35.2	42.3	46.0	36.3
PT	24.0	35.0	42.6	43.5	36.3
GM	20.3	35.1	41.3	41.7	34.6
FD	22.0	37.7	41.0	42.2	35.7
FS	24.7	36.1	42.3	43.1	36.5
Mean	24.3	37.2	42.7	44.4	37.2

Mean D.M. %: Grain: 81.1
Straw: 79.2

68/C/18.1

ORGANIC MANURING EXPERIMENT

(WOM)

The cumulative effects of organic matter on light land - Woburn Stackyard B 1968, 4th year.

For previous history, rotation, treatments etc., see 'Results' 66/C/31 and 67/C/24. All plots except those under leys (LC and LN) carried winter wheat.

Area of each sub plot: 0.0156. Area harvested: Wheat - 0.0104 leys - 0.0129.

Fertilisers applied Autumn 1967 (cwt)

Treatment	P2O5	K2O	MgO
DG	-	-	-
ST	0.4	-	0.15
PT	0.5	1.0	-
GM	0.5	1.4*	0.2
FD	2.2	1.6	0.8
FS	0.5	1.0	0.2
LC	0.5	2.0	0.2
LN	0.5	2.0	0.2

* Including 0.4 applied in spring before undersowing.

Nitrogen to winter wheat:
N0, N1, N2, N3. 0.0, 0.4, 0.8, 1.2 as 'Nitro-Chalk' in addition to basal application of 0.2 cwt N.

Cultivations, etc.:
LC and LN plots: P,K, and Mg applied: 3 Oct, 1967.
'Nitro-Chalk' applied to LN plots: 27 Mar, 1968, 14 June.
Cut twice: 5 June, 10 Oct.
Wheat: Subsoiled: 25 Sept, 1967. PK and Mg applied: 10 Oct. Peat, straw and FYM applied, ploughed: 11 Oct. Seed drilled at 190 lb: 25 Oct. K applied to GM plots: 27 Mar, 1968. GM plots undersown with late flowering red clover at 15 lb: 29 Mar. N applied: 18 Apr. All plots except GM plots sprayed with ioxynil/mecoprop (Actril C at 6 pints in 25 gals): 25 Apr. Combine harvested: 23 Aug. Variety: Cappelle.

Standard errors per plot. Winter wheat:
Whole plot: 2.19 or 6.7% (15 d.f.)
Sub plot: 2.79 or 8.5% (54 d.f.)

68/C/17.2

SUMMARY OF RESULTS

DRY MATTER

O	S	B	C	M	P	BCMP	Mean
			1ST CUT				
29.3	28.3	27.6	(±2.81) 27.1	23.5	30.0	23.4	27.0
			2ND CUT				
18.2	20.1	18.8	(±0.75) 17.8	17.9	20.6	16.6	18.6
			3RD CUT				
17.8	19.4	17.8	(±0.58) 17.5	16.4	17.5	16.5	17.5
			4TH CUT				
16.5	16.3	14.7	(±1.00) 15.9	13.7	14.6	14.2	15.1
			TOTAL OF 2ND, 3RD AND 4TH CUTS*				
52.6	55.8	51.3	(±1.45) 51.1	48.1	52.7	47.2	51.3

Mean D.M. %: 1st cut: 20.7
2nd cut: 17.4
3rd cut: 15.3
4th cut: 17.5
Total of 2nd, 3rd and 4th cuts: 16.7

* NOTE: The treatments were not applied until after the 1st cut.

68/C/17.1

GRASS

(CS)

Insecticides and molluscicides, Road Piece 1968.

Design: 4 randomised blocks of 7 plots.

Area of each plot: 0.0209. Area harvested: 0.0054.

Treatments: Untreated, no sampling (O)
Untreated, sampled (S)
BHC spray at 6 lb in 200 gals (applied once after first cut) (B)
Chlorbenside spray at 6 lb in 200 gals (applied 5 times, starting after first cut) (C)
Metaldehyde bait at 5 lb (applied 5 times, starting after first cut) (M)
Phosdrin spray at 4 oz in 200 gals (applied 5 times, starting after first cut) (P)
Combined treatments (BCMP)

NOTE: All plots except treatment (O) were sampled as treatment (S).

Basal applications: 3.5 cwt (25:0:16) in spring and 1.75 cwt after each cut except the last.

Cultivations, etc.: Basal NK compound applied: 22 Feb, 1968. Cut 4 times: 28 May, 9 July, 19 Aug, 6 Nov. NK compound applied after first 3 cuts. Insecticides and molluscicides applied:-
BHC: 6 June.
Chlorbenside: 11 June, 2 July, 5 Aug, 12 Sept, 3 Oct.
Metaldehyde: 5 June, 1 July, 21 Aug, 4 Sept, 1 Oct.
Phosdrin: 12 June, 2 July, 6 Aug, 4 Sept, 2 Oct.
Previous crop: Grass since 1945 (mainly grazed).

NOTE: Samples were taken for analysis of botanical composition on 27 May, 31 July and 10 Oct. Fauna samples (for estimation of foliage insects, soil insects and slugs) were taken during April, May, July, Sept, Oct and Nov. The concentration of BHC in the soil was determined from samples taken on 10 July, and the soil pH from samples taken on 10 Sept.

Standard errors per plot. Dry matter:

1st cut:	5.62 or 20.8% (18 d.f.)
2nd cut:	1.49 or 8.0% (18 d.f.)
3rd cut:	1.16 or 6.6% (18 d.f.)
4th cut:	1.99 or 13.2% (18 d.f.)
Total of 2nd, 3rd and 4th cuts:	2.89 or 5.6% (18 d.f.)

68/C/16.2

SUMMARY OF RESULTS

	P0	P1	P4	P6	P24	Mean
			GRAIN			
			(±0.63)			(±0.28)
K1	29.7	35.6	34.3	32.6	34.0	33.2
K4	30.2	34.9	31.2	31.7	32.5	32.1
Mean (±0.45)	30.0	35.3	32.7	32.1	33.2	32.7

Mean D.M. %: 83.4

			STRAW			
K1	27.6	35.1	37.7	34.9	40.5	35.2
K4	31.4	35.9	39.1	40.0	43.2	37.9
Mean	29.5	35.5	38.4	37.5	41.8	36.5

Mean D.M. %: 89.4

68/C/16.1

BARLEY

(CP/1)

P,K and take-all (Ophiobolus graminis), West Barnfield II 1968, the first year.

Design: 4 randomised blocks of 10 plots.

Area of each plot: 0.0265. Area harvested: 0.0140.

Treatments: All combinations of:-

1. Phosphate (in cwt P2O5 as superphosphate). Applied annually to seedbed: None (P0), 0.3 (P1), 1.2 (P4). Applied in autumn 1967 only, half before ploughing, half after: 1.8 (P6), 7.2 (P24).
2. Potash, applied annually to seedbed: 0.3 (K1), 1.2 (K4) cwt K2O as muriate of potash.

Basal applications: 0.8 cwt N as 'Nitro-Chalk' to seedbed. Weedkillers: Aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 32 gals. Paraquat at 0.75 lb ion in 32 gals.

Cultivations, etc.: Aminotriazole and ammonium thiocyanate applied: 21 Sept, 1967. Paraquat applied: 6 Oct. Half autumn superphopshate applied: 20 Oct. Ploughed: 26 Oct. Half autumn superphosphate applied: 7 Nov. 'Nitro-Chalk' applied: 29 Feb, 1968. Seedbed P and K applied, seed drilled at 140 lb: 1 Mar. Combine harvested: 21 Aug. Variety: Maris Badger. Previous crops: Grass 1966, winter wheat 1967.

NOTE: Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in spring and summer. Estimates of lodging were also made.

Standard error per plot.
Grain: 1.26 or 3.9% (27 d.f.)

68/C/15.3

DRY MATTER

	O	S	Mean
	3RD CUT		
	(±0.98)		(±0.69)
L	11.8	14.0	12.9
M	29.6	28.0	28.8
Mean (±0.69)	20.7	21.0	20.8

TOTAL OF 3 CUTS

	(±2.22)		(±1.57)
L	54.8	61.6	58.2
M	101.6	98.4	100.0
Mean (±1.57)	78.2	80.0	79.1

Mean D.M. %: 3rd cut: 18.0
Total of 3 cuts: 17.9

68/C/15.2

SUMMARY OF RESULTS

DRY MATTER

	O	S	Mean
	1ST CUT		
	(±1.41)		(±1.00)
L	21.8	25.3	23.5
M	49.5	48.2	48.8
Mean (±1.00)	35.6	36.7	36.2
	2ND CUT		
	(±0.72)		(±0.51)
L	21.2	22.3	21.8
M	22.6	22.2	22.4
Mean (±0.51)	21.9	22.3	22.1

Mean D.M. %: 1st cut: 15.9
2nd cut: 19.7

LUCERNE

(BZ)

Virus control - Long Hoos VI 1968, the third year. For treatments etc. and for previous years' results see 'Results' 66/C/26 and 67/C/20.

Area of each plot: 0.0661. Area harvested: 0.0046.

The dressing applied to M plots after each cut except the last is now 0.5 cwt N as 'Nitro-Chalk' and not NK compound as previously.

Cultivations, etc.: Basal PK compound applied: 14 Dec, 1967. 'Nitro-Chalk' applied to M plots: 12 Mar, 1968. S plots sprayed with demeton-s-methyl at 3.5 oz in 70 gals: 25 Apr, 22 May, 24 June, 13 Aug, 5 Nov. Cut 3 times: 27 May, 5 July, 29 Oct. Muriate of potash applied to L plots and 'Nitro-Chalk' to M plots after first two cuts.

NOTE: Aphid counts were made and the incidences of mosaic virus and of bean leaf roll virus were estimated.

Standard errors per plot. Grass, dry matter:

1st cut:	2.83 or 7.8% (6 d.f.)
2nd cut:	1.44 or 6.5% (6 d.f.)
3rd cut:	1.97 or 9.4% (6 d.f.)
Total of 3 cuts:	4.44 or 5.6% (6 d.f.)

68/C/25.9

DRY MATTER

	O	I	E	G	Mean
	STACKYARD C (W)				
	TOTAL OF 1ST AND 2ND CUTS				
Mean (±1.99)	50.8	46.4	51.9	44.6	48.4
	(1) and (2)				(±1.22)
U	48.1	42.3	48.6	44.2	45.8
M	53.5	50.5	55.1	45.0	51.0
	(3) and (4)				(±1.73)
NO	48.3	41.2	49.7	6.5	36.4
N1	56.2	48.3	53.8	40.6	49.7
N2	47.9	50.9	55.7	62.8	54.3
N3	50.8	45.2	48.2	68.6	53.2

Mean D.M. %: 19.4

(1) (±2.64) (3) (±3.60) For use in horizontal and diagonal comparisons only

(2) (±2.45) (4) (±3.46) For use in vertical and interaction comparisons only

68/C/26.1

N FIXATION - LUCERNE AND GRASS

(EBN and WEBO)

Nitrogen fixation by lucerne - Rothamsted (R) Pastures and Woburn (W) Stackyard B, 1968, the first year.

Design: 4 blocks of 4 plots split into 4 for minerals and nitrogen with certain high order interactions confounded with blocks.

Area of each sub-plot: 0.0011. Area harvested: 0.0006.

Treatments: All combinations of:-

Whole plots: 1. Seed: Lucerne uninoculated (O), lucerne with ineffective inoculum (I), lucerne with effective inoculum (E), Italian ryegrass (G).

Sub-plots: 2. Minerals: Unmanured (U), 0.6 cwt P2O5, 1.2 cwt K2O as compound fertiliser (0:14:28), plus 4 tons of ground chalk (3 tons on Stackyard B (W)) (M).

3. Nitrogen as 'Nitro-Chalk': None (N0), 30 (N1), 60 (N2), 90 (N3) lb N in the seedbed and after each cut except the last.

Basal applications (Pastures (R) only): Weedkiller: Paraquat at 0.75 lb ion in 37 gals.

Cultivations, etc.:-

Pastures (R): Weedkiller applied: 3 Oct, 1967. Ploughed: 29 Oct. PK, ground chalk and seedbed 'Nitro-Chalk' applied: 28 Mar, 1968. Seed drilled, lucerne at 12 lb, ryegrass at 30 lb: 1 Apr. Cut 3 times: 18 July, 26 Aug, 16 Oct. 'Nitro-Chalk' applied after first 2 cuts. Varieties: Lucerne - Du Puits, ryegrass - S22.

Stackyard B (W): Subsoiled: 27 Sept, 1967. Ploughed: 11 Oct. PK, ground chalk and seedbed 'Nitro-Chalk' applied: 26 Mar, 1968. Seed drilled, lucerne at 12 lb, ryegrass at 30 lb: 27 Mar. Seed re-drilled at same rates because of poor establishment of first drilling: 26 Apr. Cut 3 times: 23 July, 30 Aug, 24 Oct. 'Nitro-Chalk' applied after first 2 cuts. Varieties: Lucerne - Du Puits, ryegrass - S22.

NOTES: (1) Soil samples were taken before sowing to determine pH and for counts of Rhizobium leguminosarum.

(2) On Stackyard Series B (W) there was flooding of the experiment at the end of April and beginning of May, and also in September.

Standard errors per plot. Dry matter:

Rothamsted (Pastures) (R):

1st cut:	Whole plot:	2.34 or 11.0%	(6 d.f.)
	sub plot:	1.88 or 8.9%	(24 d.f.)
2nd cut:	Whole plot:	1.31 or 6.4%	(6 d.f.)
	Sub plot:	1.92 or 9.3%	(24 d.f.)
3rd cut:	Whole plot:	1.43 or 11.8%	(6 d.f.)
	Sub plot:	1.13 or 9.3%	(24 d.f.)
Total of 3 cuts:	Whole plot:	4.09 or 7.6%	(6 d.f.)
	Sub plot:	3.63 or 6.7%	(24 d.f.)

Woburn (Stackyard B) (W):

1st cut:	Whole plot:	2.92 or 15.7%	(6 d.f.)
	Sub plot:	3.04 or 16.4%	(24 d.f.)
2nd cut:	Whole plot:	1.03 or 8.4%	(6 d.f.)
	Sub plot:	2.33 or 18.9%	(24 d.f.)
3rd cut:	Whole plot:	0.90 or 10.2%	(6 d.f.)
	Sub plot:	0.94 or 10.6%	(24 d.f.)
Total of 3 cuts:	Whole plot:	3.11 or 7.8%	(6 d.f.)
	Sub plot:	4.97 or 12.5%	(24 d.f.)

68/C/26.3

SUMMARY OF RESULTS

DRY MATTER

	O	I	E	G	Mean
		PASTURES (R)			
		1ST CUT			
Mean (±1.17)	16.7	17.6	21.5	28.7	21.1
		(1) and (2)			(±0.33)
U	16.7	16.7	18.9	29.3	20.4
M	16.7	18.4	24.2	28.0	21.9
		(3) and (4)			(±0.47)
N0	9.2	11.2	19.3	16.5	14.0
N1	14.9	15.1	20.8	26.9	19.4
N2	20.1	20.5	22.6	32.8	24.0
N3	22.6	23.5	23.6	38.5	27.1

Mean D.M. %: 20.3

(1) (±1.26) (3) (±1.42) For use in horizontal and diagonal comparisons only

(2) (±0.67) (4) (±0.94) For use in vertical and interaction comparisons only

68/C/26.4

DRY MATTER

	O	I	E	G	Mean
		PASTURES (R)			
		2ND CUT			
Mean (±0.66)	18.9	18.1	22.5	23.2	20.7
		(1) and (2)			(±0.34)
U	17.9	17.2	21.1	23.8	20.0
M	19.9	19.1	24.0	22.5	21.4
		(3) and (4)			(±0.48)
N0	10.5	9.2	19.8	9.4	12.2
N1	17.9	15.2	22.6	21.4	19.3
N2	22.3	22.7	24.8	28.0	24.4
N3	24.8	25.3	22.8	33.9	26.7

Mean D.M. %: 16.9

(1) (±0.81) (3) (±1.06) For use in horizontal and diagonal comparisons only

(2) (±0.68) (4) (±0.96) For use in vertical and interaction comparisons only

68/C/26.5

DRY MATTER

	O	I	E	G	Mean
		PASTURES (R)			
		3RD CUT			
Mean (±0.72)	10.3	9.5	11.9	16.8	12.1
		(1) and (2)			(±0.20)
U	9.4	9.0	10.9	16.9	11.6
M	11.3	9.9	12.9	16.7	12.7
		(3) and (4)			(±0.28)
N0	6.7	5.3	10.4	7.6	7.5
N1	10.1	8.1	11.5	17.0	11.7
N2	11.2	11.3	13.0	20.7	14.1
N3	13.3	13.2	12.8	21.9	15.3

Mean D.M. %: 15.5

(1) (±0.77) (3) (±0.87) For use in horizontal and diagonal comparisons only

(2) (±0.40) (4) (±0.57) For use in vertical and interaction comparisons only

68/C/26.6

DRY MATTER

	O	I	E	G	Mean
	PASTURES (R)				
	TOTAL OF 3 CUTS				
Mean (±2.04)	45.9	45.2	56.0	68.7	53.9
	(1) and (2)				(±0.64)
U	44.0	42.9	50.8	70.1	52.0
M	47.9	47.4	61.1	67.2	55.9
	(3) and (4)				(±0.91)
N0	26.5	25.7	49.4	33.4	33.8
N1	43.0	38.4	54.9	65.3	50.4
N2	53.6	54.5	60.4	81.6	62.5
N3	60.7	62.0	59.1	94.3	69.0

Mean D.M. %: 17.6

(1) (±2.24) (3) (±2.58) For use in horizontal and diagonal comparisons only

(2) (±1.28) (4) (±1.81) For use in vertical and interaction comparisons only

68/C/26.7

DRY MATTER

	O	I	E	G	Mean
		STACKYARD B (W)			
		1ST CUT			
Mean (±1.46)	14.2	13.2	18.8	28.1	18.6
		(1) and (2)			(±0.54)
U	14.1	11.7	16.0	29.3	17.8
M	14.3	14.7	21.5	27.0	19.4
		(3) and (4)			(±0.76)
N0	7.9	7.6	14.5	8.8	9.7
N1	14.0	13.6	19.7	20.5	17.0
N2	16.0	13.8	20.3	32.9	20.8
N3	18.8	17.7	20.5	50.3	26.8

Mean D.M. %: 20.4

(1) (±1.65) (3) (±1.97) For use in horizontal and diagonal comparisons only

(2) (±1.08) (4) (±1.52) For use in vertical and interaction comparisons only

68/C/26.8

DRY MATTER

	O	I	E	G	Mean
		STACKYARD B (W)			
		2ND CUT			
Mean (±0.51)	11.2	11.5	13.5	13.0	12.3
		(1) and (2)			(±0.41)
U	10.3	10.6	12.7	12.4	11.5
M	12.2	12.4	14.4	13.6	13.1
		(3) and (4)			(±0.58)
NO	5.4	6.0	9.6	2.3	5.8
N1	11.4	10.9	13.9	11.2	11.9
N1	11.9	13.0	15.6	18.4	14.7
N3	16.2	16.0	15.0	20.1	16.8

Mean D.M. %: 16.2

(1) (±0.78) (3) (±1.13) For use in horizontal and diagonal comparisons only

(2) (±0.82) (4) (±1.16) For use in vertical and interaction comparisons only

68/C/26.9

DRY MATTER

	O	I	E	G	Mean
		STACKYARD B (W)			
		3RD CUT			
Mean (±0.45)	6.7	6.5	7.4	14.6	8.8
		(1) and (2)			(±0.17)
U	6.9	6.4	7.5	14.9	8.9
M	6.5	6.7	7.3	14.3	8.7
		(3) and (4)			(±0.23)
N0	3.0	3.8	6.2	2.5	3.9
N1	6.0	6.7	7.6	14.2	8.6
N2	8.4	7.7	8.2	19.1	10.8
N3	9.5	8.0	7.6	22.7	11.9

Mean D.M. %: 17.2

(1) (±0.51) (3) (±0.61) For use in horizontal and diagonal comparisons only

(2) (±0.33) (4) (±0.47) For use in vertical and interaction comparisons only

68/C/26.10

DRY MATTER

	O	I	E	G	Mean
		STACKYARD B (W)			
		TOTAL OF 3 CUTS			
Mean (±1.55)	32.1	31.2	39.7	55.7	39.7
		(1) and (2)			(±0.88)
U	31.2	28.6	36.2	56.6	38.2
M	33.0	33.8	43.1	54.9	41.2
		(3) and (4)			(±1.24)
N0	16.3	17.4	30.3	13.6	19.4
N1	31.4	31.3	41.2	45.9	37.4
N2	36.3	34.5	44.1	70.5	46.3
N3	44.5	41.7	43.1	93.0	55.6

Mean D.M. %: 17.9

(1) (±1.99) (3) (±2.65) For use in horizontal and diagonal comparisons only

(2) (±1.76) (4) (±2.48) For use in vertical and interaction comparisons only

68/C/27.1

PLACEMENT OF FUMIGANT FOR POTATOES

(WMAM)

Economic row and planting-station fumigation for control of potato cyst-nematode - Woburn Butt Furlong 1968 second year.

Design: 3 randomised blocks of 5 plots.

Area of each plot: 0.0024. Area harvested: 0.0024.

Treatments:
Fumigants: DD: None (D0), 56(D1), 112 (D2), 224 (D4), 448 lb (D8) (DH in 1967) placed in the row at base of ridge. (Treatments D0, D1, D2, D4 cumulative with 1967).

Basal applications: Magnesian limestone 4.5 cwt. 10.5 cwt (13:13:20) side placed. Weedkiller: Paraquat at 0.38 lb plus linuron at 0.5 lb in 50 gals. Insecticide: Menazon at 0.25 lb in 50 gals. Fungicide: Mancozeb at 1.2 lb in 38 gals applied on 2 occasions.

Cultivations, etc.: Ploughed: 2 Oct, 1967. Magnesian limestone applied: 25 Oct. Deep-tine cultivated: 10 Nov. Ridged: 6 Mar, 1968. DD applied at centre of base of ridge, re-ridged: 7 Mar. Rolled: 11 Mar. NPK applied, potatoes planted: 25 Apr. Weedkiller applied: 2 May. Insecticide applied: 18 June. Fungicide applied: 18 July, 30 July. Sprayed with undiluted BOV at 15 gals: 4 Sept. Lifted: 13 Sept. Variety: Majestic.

NOTES: (1). Soil samples were taken for nematode counts in March before fumigating, and again in April before planting.
(2) For previous year's results see 'Results' 67/C/34.

Standard error per plot.
Total tubers: 1.322 or 15.3% (8 d.f.)

68/C/27.2

SUMMARY OF RESULTS

D0	D1	D2	D4	D8	Mean
		TOTAL TUBERS			
		(±0.763)			
6.33	5.86	7.87	10.68	12.50	8.65
		% WARE			
83.1	82.0	88.5	89.9	91.0	86.9

68/C/28.1

RATES AND PLACEMENT OF N FOR BEANS

(CJ)

Rates and placement of N for beans followed by wheat, Long Hoos III 1968, the second year, winter wheat.

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

Area of each sub plot: 0.0020. Area harvested: 0.0020.

Treatments:

Whole plots: Treatments to spring beans 1967:

1. Method of application of N: Broadcast as 'Nitro-Chalk' with PK placed as compound (0:20:20) (B), 1 cwt N placed in compound (25:10:10), remainder broadcast as 'Nitro-Chalk' (P).
2. Levels of N: 1 (R1), 2 (R2), 3 (R3) cwt N.

Also 3 plots per block with no N (O).

Sub plots: N to winter wheat 1968:-

3. None (N0), 0.5 (N1), 1.0 (N2) cwt N as 'Nitro-Chalk'.

Basal applications: 340 lb (0:14:28) combine drilled. Weedkiller: Paraquat at 1 lb ion in 32 gals. Ioxynil at 9 oz and mecoprop at 27 oz in 20 gals.

Cultivations, etc.: Paraquat applied: 21 Sept, 1967. Rotary cultivated: 22 Nov. Seed drilled at 180 lb: 23 Nov. 'Nitro-Chalk' applied: 18 Apr, 1968. Ioxynil and mecoprop applied: 26 Apr. Combine harvested: 24 Aug. Variety: Cappelle.

NOTE: For previous years' results see 'Results' 67/C/36.

Standard errors per plot, Grain:

Whole plot: 1.70 or 4.9% (16 d.f.)
Sub plot: 3.19 or 9.2% (36 d.f.)

SUMMARY OF RESULTS

GRAIN

	B	P	N0	N1	N2	Mean
1967	(±0.98)			(±1.30)		(±0.69)
R1	35.1	34.9	26.2	39.5	39.2	35.0
R2	35.7	35.4	29.2	39.7	37.7	35.5
R3	37.4	35.1	29.8	40.9	38.1	36.2
				(1) and (2)		(±0.57)
		O	22.6	36.5	38.6	32.6
		B	30.4	39.8	37.9	36.0
		P	26.4	40.3	38.7	35.1
Mean (±0.61)			26.5	38.9	38.4	34.6*

(1) (±1.04) For use in vertical and diagonal comparisons only
(2) (±1.06) For use in horizontal and interaction comparisons only

* General mean

Mean D.M. %: 83.4

NOTE: The R N table is meaned over B and P only.

68/C/29.1

SIMULATED GRAZING EXPERIMENT

(EAV)

Comparison of yields from cages, 1 yard square (as used on the Grazed Reference Plots), and from cuts by motor scythe, Plot 6, Park Grass 1968, the second year. For treatments etc. and the previous year's results see 'Results' 67/C/38.

In 1968 the comparison between cages (C) frames (F) was discontinued because in 1967 yields in each period and total yield in the year from each were alike.

Cultivations, etc.: Basal P, K, Na and Mg applied: 18 Dec, 1967. Calcium nitrate applied: 13 Mar, 1968. G+H and G-H plots cut: 18 Apr, 24 Apr, 7 May. HG+, HG- and H plots cut for hay: 7 May. Calcium nitrate applied: 9 May. HG+ and HG- plots cut: 20 May, 6 June, 24 June. G+H, G-H and H plots cut for hay: 24 June. Calcium nitrate applied: 25 June. G+H and G-H plots cut: 12 July, 26 July, 13 Aug. HG+, HG- and H plots cut for hay: 4 Sept. Calcium nitrate applied: 5 Sept. HG+ and HG- plots cut: 27 Sept, 11 Oct, 28 Oct. G+H, G-H and H plots cut for hay: 28 Oct.

NOTE: The percentages of N, P and K in the dry grass were measured.

Standard errors per plot. Grass, dry matter:

Motor scythe

1st Period (cuts 1-3):	2.16 or 14.1% (28 d.f.)
2nd Period (cuts 4-6):	2.35 or 8.5% (28 d.f.)
3rd Period (cuts 7-10):	2.41 or 8.3% (28 d.f.)
4th Period (cuts 11-13):	1.61 or 12.0% (28 d.f.)
Total of all 4 Periods (cuts 1-13):	4.14 or 4.8% (28 d.f.)

Motor scythe and cages

1st Period (cuts 1-3):	Whole plot:	2.37 or 12.1% (10 d.f.)
	Sub plot:	1.90 or 9.7% (12 d.f.)
2nd Period (cuts 4-6):	Whole plot:	2.49 or 7.9% (10 d.f.)
	Sub plot:	1.82 or 5.8% (12 d.f.)
3rd Period (cuts 7-10):	Whole plot:	1.85 or 5.4% (10 d.f.)
	Sub plot:	4.66 or 13.6% (12 d.f.)
4th Period (cuts 11-13):	Whole plot:	2.37 or 15.1% (10 d.f.)
	Sub plot:	1.82 or 11.6% (12 d.f.)
Total of all 4 periods (cuts 1-13):	Whole plot:	5.75 or 5.7% (10 d.f.)
	Sub plot:	5.16 or 5.1% (12 d.f.)

68/C/29.3

SUMMARY OF RESULTS

GRASS. DRY MATTER

MOTOR SCYTHE

	HH	HG-	HG+	G-H	G+H	Mean
			1ST PERIOD (CUTS 1-3)			
			(±1.25)			(±0.56)
N0	6.5	7.6	7.5	6.4	5.6	6.7
N1	15.0	17.3	19.3	8.3	11.5	14.3
N2	29.9	28.5	30.8	16.1	20.4	25.1
Mean (+0.72)	17.1	17.8	19.2	10.2	12.5	15.4
			2ND PERIOD (CUTS 4-6)			
			(±1.35)			(±0.61)
N0	27.9	15.4	17.3	31.4	32.0	24.8
N1	32.5	16.6	19.2	33.0	38.8	28.0
N2	33.1	19.8	19.5	40.1	37.0	29.9
Mean (±0.78)	31.2	17.2	18.6	34.8	35.9	27.6
			3RD PERIOD (CUTS 7-10)			
			(±1.39)			(±0.62)
N0	26.3	28.7	29.8	18.9	19.2	24.6
N1	31.9	35.9	34.8	18.3	25.9	29.3
N2	35.4	39.4	40.9	26.7	26.4	33.7
Mean (±0.80)	31.2	34.7	35.1	21.3	23.8	29.2

68/C/29.4

GRASS. DRY MATTER

MOTOR SCYTHE

	HH	HG-	HG+	G-H	G+H	Mean
			4TH PERIOD (CUTS 11-13)			
			(±0.93)			(±0.42)
N0	7.2	6.6	6.1	12.9	14.1	9.4
N1	13.1	10.9	9.7	16.7	24.2	14.9
N2	17.0	9.3	7.4	26.0	19.5	15.8
Mean (±0.54)	12.4	8.9	7.7	18.5	19.3	13.4
			TOTAL OF ALL 4 PERIODS (ALL CUTS)			
			(±2.39)			(±1.07)
N0	67.9	58.3	60.6	69.6	70.9	65.5
N1	92.5	80.6	82.9	76.3	100.4	86.6
N2	115.3	97.0	98.5	108.9	103.3	104.6
Mean (±1.38)	91.9	78.6	80.7	84.9	91.5	85.5

68/C/29.5

GRASS. DRY MATTER

MOTOR SCYTHE AND CAGES

	A	C	Mean
	1ST PERIOD (CUTS 1-3)		
Mean (±0.45)	15.9	23.5	19.7
	(1) and (2)		(±0.97)
NO	6.6	13.3	9.9
N1	15.4	26.0	20.7
N2	25.6	31.2	28.4
	(3) and (4)		(±0.79)
HG+	19.2	24.4	21.8
G+H	12.5	22.6	17.6

(1) (±1.11) (3) (±0.91) For use in vertical and diagonal comparisons only

(2) (±0.78) (4) (±0.63) For use in horizontal and interaction comparisons only

	2ND PERIOD (CUTS 4-6)		
Mean (±0.43)	27.3	35.9	31.6
	(1) and (2)		(±1.02)
NO	24.6	31.3	28.0
N1	29.0	38.0	33.5
N2	28.2	38.4	33.3
	(3) and (4)		(±0.83)
HG+	18.6	32.0	25.3
G+H	35.9	39.8	37.9

(1) (±1.14) (3) (±0.93) For use in vertical and diagonal comparisons only

(2) (±0.74) (4) (±0.61) For use in horizontal and interaction comparisons only

68/C/29.6

GRASS. DRY MATTER

MOTOR SCYTHE AND CAGES

	A	C	Mean
	3RD PERIOD (CUTS 7-10)		
Mean (±1.10)	29.5	39.0	34.3
	(1) and (2)		(±0.76)
NO	24.5	35.1	29.8
N1	30.3	39.3	34.8
N2	33.6	42.7	38.1
	(3) and (4)		(±0.62)
HG+	35.1	40.0	37.6
G+H	23.8	38.0	30.9

(1) (±1.54) (3) (±1.26) For use in vertical and diagonal comparisons only

(2) (±1.90) (4) (±1.55) For use in horizontal and interaction comparisons only

	4TH PERIOD (CUTS 11-13)		
Mean (±0.43)	13.5	18.0	15.7
	(1) and (2)		(±0.97)
NO	10.1	17.0	13.5
N1	16.9	20.6	18.8
N2	13.5	16.4	14.9
	(3) and (4)		(±0.79)
HG+	7.7	13.5	10.6
G+H	19.3	22.5	20.9

(1) (±1.10) (3) (±0.90) For use in vertical and diagonal comparions only

(2) (±0.74) (4) (±0.61) For use in horizontal and interaction comparisons only

68/C/29.7

GRASS. DRY MATTER

MOTOR SCYTHE AND CAGES

	A	C	Mean
	TOTAL OF ALL PERIODS (ALL CUTS)		
Mean (±1.22)	86.1	116.4	101.3
	(1) and (2)		(±2.35)
N0	65.8	96.7	81.2
N1	91.7	123.9	107.8
N2	100.9	128.7	114.8
	(3) and (4)		(±1.92)
HG+	80.7	109.9	95.3
G+H	91.5	122.9	107.2

(1) (±2.78) (3) (±2.27) For use in vertical and diagonal comparisons only

(2) (±2.11) (4) (±1.72) For use in horizontal and interaction comparisons only

68/C/30.1

SUGAR BEET

Effect of soil compaction on growth of sugar beet, Saxmundham Grove Plot 1968, the second year. Treatments, etc. were repeated on the same plots as 1967. For details and for the previous year's results see 'Results' 67/De/1.

Area of each plot: 0.0145. Area harvested: 0.0021.

Cultivations, etc.: Ploughed: 24 Oct, 1967. Half phosphate dressing applied to NP sub-plots: 30 Jan, 1968. A plots rotary cultivated: 2 Feb. A plots rolled and lightly harrowed: 13 Mar. Basal PK, 'Nitro-Chalk' and second half phosphate dressing applied (NP sub-plots), all plots except A plots harrowed to a seedbed, B plots rolled: 26 Mar. Seed drilled at 7 lb: 27 Mar. Sprayed with pyramin at 2.2 lb in 33 gals: 2 Apr. Singled: 16 May. Sprayed with DDT at 9 oz in 18 gals: 23 May. Lifted: 24 Sept. Variety: Sharpe's Klein E.

Standard errors per plot.

Roots (washed):	Whole plot:	0.659 or 3.8% (6 d.f.)
	Sub plot:	0.738 or 4.3% (27 d.f.)
Total sugar:	Whole plot:	2.31 or 4.0% (6 d.f.)
	Sub plot:	2.69 or 4.7% (27 d.f.)

68/C/30.2

SUMMARY OF RESULTS

	N1	N2	N3	N2P	Mean
		ROOTS (WASHED)			
		(1) and (2)			(±0.330)
A	14.07	16.83	17.88	17.69	16.62
B	16.15	17.10	18.12	17.66	17.26
C	17.39	17.91	17.72	19.47	18.12
Mean (±0.213)	15.87	17.28	17.91	18.28	17.33
		SUGAR %			
A	16.7	16.7	16.3	16.5	16.6
B	16.8	16.5	16.2	16.4	16.5
C	16.8	16.5	15.9	16.5	16.4
Mean	16.8	16.6	16.1	16.5	16.5

(1) (±0.459) For use in vertical and diagonal comparisons only
(2) (±0.369) For use in horizontal and interaction comparisons only

68/C/30.3

	N1	N2	N3	N2P	Mean
		TOTAL SUGAR			
		(1) and (2)			(±1.16)
A	47.1	56.2	58.1	58.5	55.0
B	54.3	56.5	58.8	57.8	56.8
C	58.4	59.1	56.2	64.2	59.5
Mean (±0.78)	53.3	57.3	57.7	60.2	57.1
		PLANT NUMBER			
A	45.4	43.6	42.4	42.2	43.4
B	45.6	46.0	43.0	42.7	44.3
C	44.3	45.5	44.6	41.6	44.0
Mean	45.1	45.0	43.3	42.2	43.9

(1) (±1.64) For use in vertical and diagonal comparisons only
(2) (±1.34) For use in horizontal and interaction comparisons only

68/C/31.1

SOIL STRUCTURE 2

(WEAH)

Effects of peat (annual applications) and subsoiling (1963 only) Woburn Stackyard Field, plot 6 of the Continuous Barley Site, red beet 1968, the sixth year.

Design: 4 randomised blocks of 5 plots with treatments to blocks and strips of sub plots.

Area of each plot: 0.0016. Area harvested: Sub plots without tractor wheelmarks - 0.0008, with - 0.0005.

Treatments: All combinations of:-

Blocks: 1. Subsoiling: None (O), subsoiled (S) by hand to a depth of 20 inches in 1963 (this factor is now ignored in the analysis).

Whole plots: 2. Peat (cwt dry matter): None (O), 62.5 applied to top 2 in. of soil in 1965 only (Sb65), 62.5 (DG1), 125 (DG2), 187.5 (DG3) dug in to a depth of 8 in. in 1968. (DG1 after Sb 1967, DG2 after Dg1 1967, DG3 after Dg2 1967).

Strips of 5 sub plots: Wheelmarks: 5 rows without wheelmarks (O), 3 rows with wheelmarks (W).

Basal applications: Monoammonium dihydrogen phosphate, potassium nitrate, ammonium nitrate, and magnesium sulphate to supply 200 lb N, 75 lb P, 250 lb K, 50 lb Mg. All fertilisers applied to the seedbed before drilling. Insecticide: Dimethoate at 0.2 pints in 50 gals.

Cultivations, etc.: Peat applied, all plots dug: 29 Jan, 1968. Tractor wheelmarks made, seedbed fertiliser applied, raked, seed drilled at 30 lb: 15 May. Singled: 20 June. Insecticide applied: 3 July. Lifted: 9 Sept. Variety: Avon Early.

NOTES: (1) For previous years' results see 'Results' 64/C/20, 65/C/19, 66/C/11, and 67/C/8.
(2) Soil samples for PK analysis were taken in May.

Standard errors per plot.
Marketable roots: Whole plot: 1.506 or 8.4% (12 d.f.)
Sub plot: 1.908 or 10.6% (15 d.f.)

SUMMARY OF RESULTS

	O	Sb65	DG1	DG2	DG3	Mean
			MARKETABLE ROOTS (±0.954)*			
O	16.81	16.71	18.60	19.27	17.66	17.81
W	18.26	19.31	18.88	18.72	15.88	18.21
Mean (±0.753)	17.54	18.01	18.74	18.99	16.77	18.01
			TOPS FROM MARKETABLE ROOTS			
O	7.14	7.22	7.36	7.75	7.38	7.37
W	7.32	7.69	7.58	7.54	6.68	7.36
Mean	7.23	7.45	7.47	7.64	7.03	7.37
			TOTAL PRODUCE			
O	23.95	23.93	25.96	27.02	25.04	25.18
W	25.58	27.00	26.47	26.25	22.56	25.57
Mean	24.77	25.46	26.21	26.64	23.80	25.38

* For use in horizontal and interaction comparisons only

68/C/32.1

WINTER WHEAT

(WCL)

Levels of N for winter wheat after spring beans - Woburn Lansome III 1968, the second year.

Design: 3 blocks of 4 plots, split into 3.

Area of each sub plot: 0.0072. Area harvested: 0.0019.

Treatments: All combinations of:-
Whole plots: 1. Levels of N to beans 1967: None (R0), 1.0 (R2), 2.0 (R4), 3.0 (R6) cwt N as 'Nitro-Chalk'.
Sub plots: 2. Levels of N 1968: None (N0), 0.5 (N1), 1.0 (N2) cwt N as 'Nitro-Chalk'.

Basal applications: 340 lb (0:14:28) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 6 pts in 25 gals).

Cultivations, etc.: Sub-soiled both directions: 21 Sept, 1967. Deep-tine cultivated: 22 Sept. Seed combine drilled at 180 lb: 13 Oct. 'Nitro-Chalk' applied: 17 Apr, 1968. Weedkiller applied: 23 Apr. Combine harvested: 23 Aug. Variety: Cappelle.

NOTE: For the previous year's results see 'Results' 67/C/39.

Standard errors per plot. Grain:
Whole plot: 1.92 or 4.8% (6 d.f.)
Sub plot: 2.39 or 6.0% (16 d.f.)

68/C/32.2

SUMMARY OF RESULTS

GRAIN

	R0	R2	R4	R6	Mean
		(1) and (2)			(±0.69)
N0	27.9	30.8	31.1	35.2	31.3
N1	42.3	44.8	44.7	47.2	44.7
N2	45.5	43.9	41.8	42.9	43.5
Mean (±1.11)	38.6	39.8	39.2	41.8	39.8

(1) (±1.58) For use in horizontal and diagonal comparisons only
(2) (±1.38) For use in vertical and interaction comparisons only

Mean D.M. %: 79.3

68/C/33.1

NEMATICIDES (FORMERLY PLOUGHSOLE D-D)

(WCM)

The effect of nematicides on Trichodorus and Longidorus in sugar beet - Woburn Butt Furlong, 2nd year.

Design: 2 blocks of 3 plots split into 16.

Area of each sub plot: 0.0045. Area harvested: 0.0034.

Treatments: All combinations of:-

Whole plots:	(1) Nitrogen: None (N0), 1.0 (N1), 2.0 cwt N (N2) as 'Nitro-Chalk'.
Quarter plots:	(2) Residues of D-D 1967: None (D0), 65 (D1), 140 (D2), 250 lb D-D (Dichloropropane-dichloropropene) (D3).
Strips of three quarter plots (at right angles to quarter plots of factor 2):	(3) Fumigants: None (0), 82 lb Telone (dichloropropene) (D) injected in row position before sowing at 6 inch depth. 22.2 lb of 5% granules Lannate (L), 10.6 lb of 10% granules Temik (T). Granules placed in row positions after sowing.

Basal applications: 45 cwt magnesian limestone, 340 lb (0:14:28), 5 cwt salt. Insecticide: Demeton-s-methyl at 3.5 oz in 37 gals.

Cultivations, etc.: Magnesian limestone applied: 7 Nov, 1967. Salt applied, ploughed: 9 Nov. PK applied: 22 Mar, 1968. 'Nitro-Chalk' applied: 25 Mar. Telone applied, seed drilled at 8 lb: 26 Mar. Lannate and Temik applied: 29 Mar. Singled: 20-31 May. Insecticide applied: 17 June. Lifted: 12 Dec. Variety: Klein E.

NOTES: (1) Samples were taken monthly from May to October for nematode counts.
(2) For previous year's results see 'Results' 67/C/40.

Standard errors per plot (pooled):

Roots (washed):	2.087 or 13.2% (47 d.f.)
Total sugar:	6.55 or 13.4% (47 d.f.)
Tops:	2.499 or 18.8% (47 d.f.)

68/C/33.2

SUMMARY OF RESULTS

	O	D	L	T	Mean
	ROOTS (WASHED)				
	(±0.738)				(±0.369)
NO	7.57	6.38	7.14	11.10	8.05
N1	18.34	15.43	16.35	21.68	17.95
N2	21.74	20.19	20.17	23.37	21.37
Mean (±0.426)	15.88	14.00	14.56	18.72	15.79

	D0	D1	D2	D3
	(±0.738)			
NO	5.34	8.43	8.72	9.70
N1	16.40	18.93	18.57	17.89
N2	20.44	20.38	22.49	22.17
	(±0.852)			
O	13.31	16.38	16.70	17.14
D	12.69	13.91	14.77	14.63
L	12.68	14.41	15.75	15.39
T	17.57	18.96	19.15	19.19
Mean (±0.426)	14.06	15.92	16.59	16.59

68/C/33.3

	O	D	L	T	Mean
			SUGAR %		
NO	15.7	15.5	15.5	15.8	15.6
N1	15.7	15.8	15.5	15.7	15.7
N2	15.2	15.3	15.2	15.3	15.3
Mean	15.5	15.5	15.4	15.6	15.5

	D0	D1	D2	D3
NO	15.5	15.7	15.6	15.7
N1	15.8	15.6	15.7	15.6
N2	15.3	15.3	15.2	15.2
O	15.4	15.5	15.6	15.6
D	15.5	15.5	15.5	15.5
L	15.4	15.5	15.3	15.3
T	15.7	15.6	15.6	15.6
	15.5	15.5	15.5	15.5

68/C/33.4

	O	D	L	T	Mean
		TOTAL SUGAR			
		(±2.31)			(±1.16)
NO	23.8	19.8	22.2	35.1	25.2
N1	57.8	48.6	50.6	68.2	56.3
N2	66.0	61.7	61.2	71.5	65.1
Mean (±1.34)	49.2	43.4	44.7	58.3	48.9

	D0	D1	D2	D3
		(±2.31)		
NO	16.7	26.5	27.3	30.5
N1	51.8	59.1	58.5	55.9
N2	62.3	62.2	68.3	67.6
		(±2.67)		
O	41.0	50.7	52.0	53.1
D	39.5	42.9	45.9	45.3
L	39.1	44.4	48.1	47.1
T	54.9	59.0	59.4	59.7
Mean (±1.34)	43.6	49.3	51.4	51.3

68/C/33.5

	O	D	L	T	Mean
		TOPS			
		(±0.884)			(±0.442)
NO	4.83	4.89	5.46	7.67	5.71
N1	13.33	10.88	13.03	17.69	13.73
N2	20.60	19.31	18.75	22.65	20.33
Mean (±0.510)	12.92	11.70	12.41	16.01	13.26

	DO	D1	D2	D3
		(±0.884)		
NO	3.84	5.72	6.12	7.18
N1	11.77	15.41	13.56	14.19
N2	18.85	19.48	22.29	20.70
		(±1.020)		
O	10.41	13.98	13.27	14.02
D	10.54	11.73	12.66	11.86
L	10.89	12.13	13.58	13.05
T	14.11	16.32	16.45	17.15
Mean (±0.510)	11.49	13.54	13.99	14.02

68/C/34.1

FUMIGANTS AND IRRIGATION

(WCR)

The effect of fumigants on the control of Pratylenchus spp. in barley - Woburn Butt Close Series III, 1st year.

Design: 3 blocks of 4 plots, with fumigants on quarter plots and nitrogen on eighth plots with split plot confounding.

Area of each sub plot: 0.0050. Area harvested: 0.0020.

Treatments: All combinations of:-

Whole plots: 1. Irrigation: None (O), full irrigation (I).

Quarter plots: 2. Fumigants: None (O), chloropicrin at 400 lb injected at 12 inch spacings (C), D-D at 33 1/2 gals injected at 12 inch spacings (D), Temik at 6 lb a.i. (60 lb granules) combine drilled (T).

Eighth plots: 3. Nitrogen: None (N0), 0.4 (N1), 0.8 (N2), 1.2 (N3) cwt N as 'Nitro-Chalk'.

Basal applications: 270 lb (0:20:20). Weedkiller: Ioxynil/mecoprop (Actril C at 5 pts in 25 gals).

Cultivations, etc.: Ploughed: 19 Sept, 1967. D-D injected: 30 Oct. Chloropicrin injected: 7 Nov. Magnesian limestone applied at 22 1/2 cwt: 8 Nov. Basal PK applied: 4 Mar, 1968. Seed at 140 lb, and Temik combine drilled: 5 Mar, 'Nitro-Chalk' applied: 11 Mar. Weedkiller applied: 26 Apr. Irrigation applied at 0.5 inches: 14 June, and 0.75 inches: 20 June. Combine harvested: 21 Aug. Variety: Maris Badger. Previous crops: Spring wheat 1966, barley 1967.

NOTE: Crop and soil samples taken at intervals through the growing season for nematode counts.

Standard error per plot (pooled).
Grain: 4.05 or 16.0% (62 d.f.)

68/C/34.2

SUMMARY OF RESULTS

GRAIN

	O	C	D	T	Mean
		(±1.17)			(±0.58)
O	25.6	30.8	23.6	22.3	25.6
I	25.1	29.8	23.2	21.9	25.0
Mean (±0.83)	25.4	30.3	23.4	22.1	25.3

	N0	N1	N2	N3
		(±1.17)		
O	13.6	29.1	30.9	28.6
I	14.2	28.4	29.7	27.8
		(±1.65)		
O	10.0	27.4	32.6	31.4
C	29.4	32.1	30.8	28.9
D	9.3	29.1	29.4	25.9
T	6.9	26.5	28.5	26.7
Mean (±0.83)	13.9	28.8	30.3	28.2

Mean D.M. %: 82.9

68/C/34.3

STRAW

	O	C	D	T	Mean
O	25.2	32.8	26.5	23.9	27.1
I	28.3	33.0	26.1	25.4	28.2
Mean	26.8	32.9	26.3	24.7	27.7

	N0	N1	N2	N3
O	17.2	31.5	33.2	26.6
I	17.8	32.4	33.8	28.9
O	11.2	28.5	36.5	30.9
C	31.4	36.4	33.9	29.9
D	15.2	34.0	31.8	24.3
T	12.2	29.0	31.7	25.8
Mean	17.5	32.0	33.5	27.7

Mean D.M. %: 86.9

68/C/35.1

FORMS OF MAGNESIUM

(WCU)

Effects of forms of magnesium fertiliser on sugar beet - Woburn Stackyard C, 1st year.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0072. Area harvested: 0.0039.

Treatments:
Without limestone (Magnesium free): None (O), 200 lb Mg as dolomitic limestone (D2), 100 lb Mg as Epsom salts (E), 100 lb Mg as calcined magnesite (C1), 200 lb Mg as calcined magnesite (C2).
With limestone (Magnesium free): 100 lb Mg as dolomitic limestone plus 7.5 cwt limestone (D1L1), 15 cwt limestone (L2), 100 lb Mg as Epsom salts plus 15 cwt limestone (EL2).

Basal applications: 745 lb (15:15:15). Insecticide: Demeton-s-methyl at 3.5 oz in 37 gals.

Cultivations, etc.: Subsoiled twice: 7 July, 1967. Deep-tine cultivated: 11 July. Ploughed: 13 Nov. Mg and limestone treatments applied: 15 Feb, 1968. NPK applied: 20 Mar. Seed drilled at 8 lb: 25 Mar. Singled: 15 - 31 May. Insecticide applied: 17 June. Lifted: 9 Dec. Variety: Klein E. Previous crops: Fallow 1966 and 1967.

Standard errors per plot.

Roots (washed):	1.184 or 9.9% (21 d.f.)
Total sugar:	3.97 or 10.7% (21 d.f.)
Tops:	1.000 or 14.3% (21 d.f.)

68/C/35.2

SUMMARY OF RESULTS

O	D2	E	C1	C2	D1L1	L2	EL2	Mean
			ROOTS (WASHED)					
			(±0.592)					
7.77	14.01	10.39	10.61	12.76	13.47	12.30	14.03	11.92
			SUGAR %					
15.3	15.7	15.4	15.5	15.7	15.7	15.6	15.5	15.6
			TOTAL SUGAR					
			(±1.99)					
24.1	44.1	32.1	32.9	40.2	42.4	38.3	43.6	37.2
			TOPS					
			(±0.500)					
5.79	7.84	6.66	6.42	6.89	7.35	7.09	7.81	6.98

68/C/36.1

CEREAL CYST - NEMATODE

(WCG)

The effect of cereal cyst-nematode (Heterodera avenae) on the yield of spring wheat and barley - Woburn Butt Close 1968 the 3rd year.

Design (each crop): 3 blocks of 5 plots split into 3. Blocks arranged in pairs, one of each crop.

Area of each sub plot: 0.0030. Area harvested: 0.0020.

Treatments: All combinations of:-

Whole plots*: 1. Oats 1966: Under oats till harvest (O) (previously C, D, E, 3 plots per block). Oats rotary cultivated 26 May, 1966 and then bare fallowed (A). Oats rotary cultivated 26 May, 1966, bare fallowed, injected with DD at 400 lb 19 Dec, 1966 (B).

Sub plots: 2. Nitrogen to wheat 1968 cumulative on 1967: 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt N as 'Nitro-Chalk'.

3. Nitrogen to barley 1968 cumulative on 1967: 0.4 (N1), 0.8 (N2), 1.2 (N3) cwt N as 'Nitro-Chalk'.

* NOTE: Because of a severe invasion of grain aphid (Sitobion avenae) a test O.v 0.4 lb dimethoate in 30 gals (S) was made on spring wheat. Two of the 3 (O) plots, in each block, and the A and B plots, were sprayed.

Basal applications: Wheat and barley: Weedkiller: Aminotriazole at 4 lb plus ammonium thiocyanate at 3.7 lb in 33 gals. Magnesian limestone at 22.5 cwt. 280 lb (0:20:20) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 5 pts in 25 gals).

Cultivations, etc.:-

Aminotriazole plus ammonium thiocyanate applied, subsoiled: 21 Sept, 1967. Magnesian limestone applied: 18 Oct. Ploughed: 11 Nov. Seed combine drilled, wheat at 170 lb, barley at 140 lb: 5 Mar, 1968. 'Nitro-Chalk' applied: 13 Mar. Actril C applied: 26 Apr. Insecticide applied to wheat only: 15 July. Combine harvested: 22 Aug. Varieties: Wheat - Kolibri, barley - Maris Badger.

NOTES: (1) For the previous year's results see 'Results' 67/C/41.
(2) Soil samples were taken for nematode counts in June.

Standard errors per plot. Grain:

Spring wheat: Whole plot: 2.82 or 8.4% (8 d.f.)
Sub plot: 5.11 or 15.3% (20 d.f.)

Barley: Whole plot: 2.59 or 7.9% (8 d.f.)
Sub plot: 4.17 or 12.7% (20 d.f.)

68/C/36.2

SUMMARY OF RESULTS

SPRING WHEAT

GRAIN

	OS	O	AS	BS	Mean
	(1) & (2)		(3) & (4)		(±1.32)
N1	22.3	22.3	26.7	28.2	24.4
N2	35.1	29.7	36.9	40.4	35.4
N3	41.0	37.4	41.7	41.2	40.5
Mean (±1.63)	32.8 (±1.15)	29.8	35.1	36.6	33.4

Mean D.M. %: 76.0

(1) (±2.06) (3) (±2.91) For use in horizontal and diagonal comparisons only

(2) (±2.09) (4) (±2.95) For use in vertical and interaction comparisons only

68/C/36.3

BARLEY

GRAIN

	O	A	B	Mean
	(1) & (2)	(3) & (4)		(±1.08)
N1	25.8	26.6	32.3	27.2
N2	34.0	36.8	34.8	34.7
N3	36.7	37.7	34.0	36.4
Mean (±1.49)	32.2 (±0.86)	33.7	33.7	32.8

Mean D.M. %: 83.2

(1) (±1.42) (3) (±2.47) For use in horizontal and diagonal comparisons only

(2) (±1.39) (4) (±2.41) For use in vertical and interaction comparisons only

68/C/37.1

NEMATODE-RESISTANT BARLEY

(WCX)

Effect of resistant and susceptible segregates of barley grown in 1967 on land heavily infested with Heterodera avenae on the yields of the succeeding susceptible barley - Woburn Butt Close 1968 the 5th year.

For design and previous years' results see 'Results' 64/Da/3, 65/C/30, 66/C/23 and 67/C/42.

Area of each plot: 0.0032. Area harvested: 0.0021.

Treatments: All combinations of:-

1. Nitrogen: 0.4 (N1), 0.8 (N2), 1.2 cwt N (N3) as 'Nitro-Chalk' in the seedbed N1, N2 and N3 being cumulative with N rates 1964 - 67.
2. Formalin 1964: None (64O), Formalin (64F).
3. Formalin 1965: None (65O), Formalin (65F).
4. Formalin 1966: None (66O), Formalin (66F).
5. Varieties 1967: Resistant segregate (R), susceptible segregate (S).

Basal applications: 280 lb (0:20:20) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 5 pts in 25 gals). Magnesian limestone at 22.5 cwt.

Cultivations, etc.:-

Subsoiled: 21 Sept, 1967. Magnesian limestone applied: 18 Oct. Ploughed: 11 Nov. Seed combine drilled at 140 lb: 5 Mar, 1968. 'Nitro-Chalk' applied: 12 Mar. Weedkiller applied: 26 Apr. Combine harvested: 21 Aug. Variety: Maris Badger.

NOTE: Soil samples were taken for nematode counts in June.

Standard error per plot.

Grain: 3.03 or 11.1% (21 d.f.)

68/C/37.2

SUMMARY OF RESULTS

GRAIN

	650	65F	660	66F	R	S	N1	N2	N3	Mean
	(±0.87)		(±0.87)		(±0.87)		(±1.07)			(±0.62)
640	25.9	27.7	27.5	26.1	27.6	26.1	19.4	27.2	34.0	26.8
64F	26.9	29.0	28.2	27.6	29.1	26.8	20.4	28.5	35.0	27.9
			(±0.87)		(±0.87)		(±1.07)			(±0.62)
		650	26.9	25.9	28.4	24.4	18.9	26.9	33.4	26.4
		65F	28.9	27.8	28.3	28.4	20.8	28.7	35.5	28.4
					(±0.87)		(±1.07)			(±0.62)
				660	28.8	26.9	20.0	29.0	34.6	27.9
				66F	27.9	25.9	19.8	26.6	34.3	26.9
							(±1.07)			(±0.62)
						R	21.1	28.9	35.1	28.4
						S	18.7	26.7	33.9	26.4
						Mean (±0.76)	19.9	27.8	34.5	27.4

Mean D.M. %: 83.5

68/C/38.1

N-RELEASE FROM GREEN MANURES

(WCO)

The effect of green manures on the yield of succeeding crops - Woburn, Great Hill Bottom I, 1968 - sugar beet and barley.

Design (each crop): 2 blocks of 5 plots, split into 4.

Area of each sub plot:		Area harvested:
Sugar beet:	0.0067	0.0027
Barley:	0.0083	0.0036

Treatments: All combinations of:-

Whole plots 1967: 1. Green manures: None (F), ryegrass with 0.6 cwt N as 'Nitro-Chalk' (R), ryegrass with 0.6 cwt N as 'Nitro-Chalk', cut in autumn 1967 (RC), trefoil (T), clover (Dorset Marl) (C).

Blocks 1968: 2. Crops: Barley (B), sugar beet (Sb).

Quarter plots 1968: 3. Nitrogen to barley: None (N0), 0.4 (N1), 0.8 (N2), 1.2 (N3) cwt N as 'Nitro-Chalk'.
Nitrogen to sugar beet: None (N0), 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt N as 'Nitro-Chalk'.

NOTE: F plots (only) received paraquat at 1 lb ion.

1967. The experiment began with the planting of early potatoes in spring 1967. These were lifted in July and followed by the green manures.

Basal applications: 40 cwt ground chalk, 1200 lb compound (6:15:15).

Cultivations, etc.: Ploughed: 5 Aug, 1966. Ground chalk applied: 9 Jan, 1967. Deep-tine cultivated: 8 - 14 Feb. NPK compound applied: 20 Mar. Rotary cultivated, potatoes planted: 21 Mar. Earthed up: 10 May. Lifted: 18 July. Variety: Arran Pilot. Harrowed, spring-tine cultivated: 18 July. 'Nitro-Chalk' applied to 'R' and 'RC' plots, Ryegrass sown at 40 lb and trefoil, clover at 30 lb: 19 July. 'F' plots rotary cultivated: 18 Aug. 'RC' plots cut: 30 Oct. 'F' plots weedkiller sprayed: 10 Nov. Previous crops: Sugar beet 1965, fallow 1966.

1968. Basal applications:

Barley: 390 lb (0:14:28). Weedkiller: Ioxynil/mecoprop (Actril C at 5 pints in 25 gals).

Sugar beet: 390 lb (0:14:28) on the plough furrow. Salt at 5 cwt. 200 lb (0:14:28) in the seedbed. Insecticide: demeton-s-methyl at 3.5 oz in 37 gals.

Cultivations, etc.:

Barley: Ploughed: 19 Feb, 1968. Basal PK applied: 21 Feb. Seed drilled at 140 lb: 7 Mar. 'Nitro-Chalk' applied: 12 Mar. Weedkiller applied: 3 May. Combine harvested: 22 Aug. Variety: Maris Badger.

Sugar beet: Ploughed: 16 Feb. 1st part of basal PK applied: 21 Feb. Salt applied: 22 Feb. 2nd part of basal PK applied: 20 Mar. 'Nitro-Chalk' applied, seed drilled at 8 lb: 25 Mar. Singled: 22 - 24 May. Insecticide applied: 17 June. Lifted: 13 Dec. Variety: Klein E.

NOTES: (1) The green manures were sampled before ploughing-in for dry matter and N. Soil samples were taken in April and June for mineral-N.- Samples of green barley were taken in June for dry matter and N.

(2) Barley grain from one of the plots (R3) was carried over on to an adjoining plot (C2). Estimated yields were used in the analysis.

Standard errors per plot. Barley, Grain:

Whole plot: 2.35 or 8.7% (4 d.f.)
Sub plot: 3.80 or 14.0% (13 d.f.)

Sugar beet:

Roots (washed):	Whole plot:	0.337 or 1.6% (4 d.f.)
	Sub plot:	0.998 or 4.9% (15 d.f.)
Total sugar:	Whole plot:	1.61 or 2.6% (4 d.f.)
	Sub plot:	2.62 or 4.1% (15 d.f.)
Tops:	Whole plot:	0.943 or 4.9% (4 d.f.)
	Sub plot:	1.578 or 8.0% (15 d.f.)

68/C/38.3

SUMMARY OF RESULTS

BARLEY

GRAIN

	N0	N1	N2	N3	Mean
		(1) and (2)			(±1.66)
F	25.8	33.1	25.2	25.2	27.3
R	32.1	33.4	26.3	19.2	27.7
RC	28.7	33.7	24.8	27.6	28.7
T	32.4	29.7	24.3	22.9	27.3
C	31.0	29.4	18.5	19.1	24.5
Mean (±1.20)	30.0	31.9	23.8	22.8	27.1

Mean D.M. %: 84.4

(1) (±2.86) For use in vertical and diagonal comparisons only
(2) (±2.69) For use in horizontal and interaction comparisons only

68/C/38.4

SUGAR BEET

	N0	N1	N2	N3	Mean
	ROOTS (WASHED)				
	(1) and (2)				(±0.238)
F	17.61	22.47	22.31	23.00	21.35
R	19.98	20.22	19.77	20.51	20.12
RC	17.49	19.85	20.92	19.08	19.33
T	18.71	21.28	21.37	21.08	20.61
C	19.65	22.35	21.04	19.45	20.62
Mean (±0.316)	18.69	21.24	21.08	20.62	20.41

(1) (±0.656) For use in vertical and diagonal comparisons only
(2) (±0.706) For use in horizontal and interaction comparisons only

SUGAR %

F	15.7	15.5	15.5	15.3	15.5
R	15.8	15.8	15.2	15.0	15.4
RC	15.7	15.7	15.5	15.1	15.5
T	15.8	15.6	15.4	15.3	15.5
C	15.9	15.5	15.3	15.2	15.5
Mean	15.8	15.6	15.4	15.2	15.5

SUGAR BEET

	N0	N1	N2	N3	Mean
		TOTAL SUGAR			
		(1) and (2)			(±1.14)
F	55.4	69.6	69.4	70.1	66.1
R	63.2	63.7	59.9	61.5	62.1
RC	54.8	62.4	64.7	57.5	59.9
T	59.0	66.2	65.9	64.6	63.9
C	62.5	69.2	64.2	59.3	63.8
Mean (±0.83)	59.0	66.2	64.8	62.6	63.2

(1) (±1.97) For use in vertical and diagonal comparisons only
(2) (±1.85) For use in horizontal and interaction comparisons only

TOPS

		(1) and (2)			(±0.667)
F	10.54	18.63	19.12	24.10	18.10
R	13.24	17.81	23.53	25.08	19.92
RC	12.42	16.01	20.43	26.15	18.75
T	13.81	19.20	21.65	24.59	19.81
C	12.50	17.81	24.02	24.76	19.77
Mean (±0.499)	12.50	17.89	21.75	24.94	19.27

(1) (±1.174) For use in vertical and diagonal comparisons only
(2) (±1.116) For use in horizontal and interaction comparisons only

68/C/39.1

INTENSIVE WHEAT

(SC)

Saxmundham, Oldershaw's and Garner's plots 1968, the third year. For treatments etc. and for previous years' results see 'Results' 66/C/30 and 67/C/23.

Area of each sub plot: 0.0182. Area harvested: 0.0098.

Basal applications: 560 lb (0:20:20) broadcast. Weedkillers:
To wheat: Mecoprop at 36 oz and 2,4-D at 9 oz in 32 gals.
To beans: Simazine at 1 lb in 33 gals.

Cultivations, etc.: Ploughed: 2 - 9 Sept, 1967. Basal PK compound applied: 15 Sept.
Wheat: Seed drilled: 10 Oct, 1967. 'Nitro-Chalk' applied: 28 Mar, 1968. Weedkiller applied: 18 Apr. Combine harvested: 14 Aug. Variety: Cappelle.
Grass ley: 'Nitro-Chalk' applied: 19 Mar, 1968. Seed drilled: 28 Mar. Cut twice: 11 June and 6 Sept. 'Nitro-Chalk' and muriate of potash applied: 12 June. Variety: S22 Italian.
Beans: Seed drilled: 8 March, 1968. Weedkiller applied: 21 Mar. Combine harvested: 9 Sept. Variety: Maris Bead.

NOTES: (1) Yields were taken for winter wheat only.
(2) Estimates of the incidence of take-all (Ophiobolus graminis) and eyespot (Cercosporella herpotrichoides) were made.

Standard errors per plot. Grain:
Whole plot: 1.35 or 3.4% (6 d.f.)
Sub plot: 2.38 or 5.9% (18 d.f.)

68/C/39.2

SUMMARY OF RESULTS

WINTER WHEAT

Crop in 66	67	N1	N2	N3	Mean
			GRAIN		
			(1) and (2)		(±0.68)
W	W	34.1	40.1	34.1	36.1
L	W	38.9	45.5	38.8	41.1
W	Be	46.3	44.1	40.0	43.5
Mean (±0.69)		39.8	43.2	37.7	40.2

Mean D.M. %: 80.9

(1) (±1.18) For use in vertical and diagonal comparisons only
(2) (±1.19) For use in horizontal and interaction comparisons only

			STRAW		
W	W	26.9	31.0	26.9	28.3
L	W	35.5	34.1	31.7	33.8
W	Be	39.9	29.9	41.1	37.0
Mean		34.1	31.7	33.2	33.0

Mean D.M. %: 75.6

68/C/40.1

BARLEY

(SAX/B/1)

Formalin, nitrogen and lime for barley, Saxmundham, Grove Plot, 1968, the second year.

Design: A half replicate of 2 x 2 x 2 x 2 x 2 x 2 in 2 blocks of 16 plots, with 2 additional plots per block.

Area of each plot: 0.0022. Area harvested: 0.0011.

Treatments: All combinations of:-

1. Formalin applied 1967: None (O), formalin at 532 gals in 2900 gals (R).
2. Formalin applied 1968: None (O), formalin at 532 gals in 2900 gals (F).
3. Nitrogen, applied 1967 and 1968: 0.6 (N1), 1.2 (N2) cwt N as calcium nitrate.
4. Time of application of nitrogen, 1967 and 1968: Early (E), late (L).
5. Lime applied 1967 and 1968: None (O), 7.5 tons of ground chalk (C).
6. Variety, 1967 and 1968: Deba Abed (A), Maris Badger (B).

Additional plots: One of Deba Abed 1967 and 1968 (A), one of Maris Badger (B), each with no formalin, no nitrogen (NO), and no lime, either in 1967 or in 1968.

Basal applications: 0.5 cwt P_2O_5, 0.5 cwt K_2O as (0:20:20).
Weedkiller: Ioxynil at 9 oz and mecoprop at 27 oz in 50 gals.

Cultivations, etc.: Ploughed: 24 Oct, 1967. Formalin applied: 23 Jan, 1968. Ground chalk applied: 15 Feb. Basal PK applied, seed drilled at 160 lb and calcium nitrate (E plots) applied: 14 Mar. Weedkiller applied, calcium nitrate applied to L plots: 15 May. Harvested: 14 Aug.

NOTES: (1) For the previous years' results see 'Results' 67/C/45.
(2) Soil samples were taken for N determination before sowing.

Standard error per plot.
Grain: 2.38 or 6.2% (12 d.f.)

68/c/40.2

SUMMARY OF RESULTS

GRAIN

	N1	N2	E	L	O	C	A	B	O	R	Mean
	(±0.84)		(±0.84)		(±0.84)		(±0.84)		(±0.84)		(±0.60)
O	36.7	38.6	37.5	37.8	37.9	37.4	40.5	34.8	36.6	38.6	37.6
F	38.6	39.4	39.8	38.1	39.1	38.9	43.7	34.2	39.0	38.9	39.0
			(±0.84)		(±0.84)		(±0.84)		(±0.84)		(±0.60)
		N1	38.0	37.2	37.3	37.9	39.4	35.8	37.6	37.6	37.6
		N2	39.2	38.7	39.7	38.3	44.7	33.2	38.1	39.9	39.0
					(±0.84)		(±0.84)		(±0.84)		(±0.60)
				E	38.5	38.7	43.6	33.6	39.1	38.1	38.6
				L	38.4	37.5	40.5	35.4	36.5	39.4	38.0
							(±0.84)		(±0.84)		(±0.60)
						O	41.8	35.1	37.9	39.1	38.5
						C	42.4	33.9	37.8	38.5	38.1
									(±0.84)		(±0.60)
								A	41.8	42.4	42.1
								B	33.9	35.2	34.5
Mean (±0.60)									37.8	38.8	38.3

Additional plots (NO)

A	B
10.0	13.7

General mean: 35.4

Mean D.M. %: 71.5

68/C/40.3

STRAW

	N1	N2	E	L	O	C	A	B	O	R	Mean
O	38.7	46.3	47.5	37.5	43.0	42.1	39.8	45.2	41.2	43.9	42.5
F	39.5	46.7	48.0	38.2	42.5	43.7	41.1	45.0	44.3	41.8	43.1
		N1	44.6	33.6	39.0	39.1	35.5	42.6	38.8	39.4	39.1
		N2	50.9	42.1	46.4	46.6	45.4	47.6	46.7	46.3	46.5
				E	47.6	47.9	45.8	49.6	48.4	47.1	47.7
				L	37.9	37.8	35.1	40.6	37.1	38.6	37.8
						O	40.5	44.9	42.1	43.3	42.7
						C	40.5	45.3	43.4	42.4	42.9
								A	40.7	40.2	40.5
								B	44.7	45.5	45.1
Mean									42.7	42.8	42.8

Additional plots (NO)

A	B
9.1	12.4

General mean: 39.2
Mean D.M. %: 57.5

68/C/41.1

RED CLOVER

(SAX/RCL/1)

Phosphate and potash, Saxmundham, Victor's Plot, 1968, the second year. For treatments etc. and for the previous year's results see 'Results' 67/C/45.

Area of each plot: 0.0018. Area harvested: 0.0012.

Cultivations, etc.: Fertilisers applied: 29 Feb, 1968.
Cut 3 times: 28 May, 25 July, 10 Sept.

Standard errors per plot. Dry matter:

1st cut:	1.79 or 5.6%	(9 d.f.)
2nd cut:	1.69 or 6.0%	(9 d.f.)
3rd cut:	1.17 or 9.2%	(9 d.f.)
Total of 3 cuts:	3.11 or 4.3%	(9 d.f.)

68/C/41.2

SUMMARY OF RESULTS

	K0	K1	Mean
	1ST CUT		
	(±0.89)		(±0.63)
P1	31.9	33.1	32.5
P4	30.7	31.6	31.1
Mean (±0.63)	31.3	32.3	31.8
	2ND CUT		
	(±0.85)		(±0.60)
P1	27.7	29.6	28.6
P4	26.5	28.7	27.6
Mean (±0.60)	27.1	29.2	28.1

Mean D.M. %: 1st cut: 15.5
2nd cut: 20.6

68/C/41.3

	K0	K1	Mean
	3RD CUT		
	(±0.59)		(±0.42)
P1	13.2	12.6	12.9
P4	12.6	12.5	12.5
Mean (±0.42)	12.9	12.5	12.7
	TOTAL OF 3 CUTS		
	(±1.56)		(±1.10)
P1	72.8	75.2	74.0
P4	69.7	72.8	71.3
Mean (±1.10)	71.3	74.0	72.6

Mean D.M. %: 3rd cut: 18.1
Total of 3 cuts: 18.1

68/C/42.1

LUCERNE

(SAX/LU/1)

Phosphate and potash, Saxmundham, Victor's Plot, 1968, the second year. For treatments etc. and for the previous year's results see 'Results' 67/C/46.

Area of each plot: 0.0018. Area harvested: 0.0012.

Cultivations etc.: Fertilisers applied: 29 Feb, 1968.
Cut 3 times: 28 May, 25 July, 10 Sept.

Standard errors per plot. Dry matter:

1st cut:	2.06 or 4.4% (9 d.f.)
2nd cut:	1.37 or 3.9% (9 d.f.)
3rd cut:	1.12 or 4.8% (9 d.f.)
Total of 3 cuts:	3.01 or 2.8% (9 d.f.)

68/C/42.2

SUMMARY OF RESULTS

DRY MATTER

	K0	K1	Mean
	1ST CUT		
	(±1.03)		(±0.73)
P1	43.2	48.0	45.6
P4	46.5	49.3	47.9
Mean (±0.73)	44.8	48.6	46.7
	2ND CUT		
	(±0.69)		(±0.49)
P1	32.7	36.7	34.7
P4	34.5	37.8	36.1
Mean (±0.49)	33.6	37.2	35.4

Mean D.M. %: 1st cut: 21.1
2nd cut: 22.5

68/C/42.3

DRY MATTER

	K0	K1	Mean
	3RD CUT		
	(±0.56)		(±0.40)
P1	20.7	24.3	22.5
P4	22.4	26.3	24.4
Mean (±0.40)	21.6	25.3	23.4
	TOTAL OF 3 CUTS		
	(±1.51)		(±1.07)
P1	96.6	108.9	102.8
P4	103.4	113.4	108.4
Mean (±1.07)	100.0	111.2	105.6

Mean D.M. %: 3rd cut: 21.2
Total of 3 cuts: 21.6

68/C/43.1

GRASS

(SAX/G/1)

N and cutting, Saxmundham Grove Plot 1968, the second year. For treatments etc. and for the previous year's results see 'Results' 67/C/47.

Design: 4 randomised blocks of 9 plots.

Area of each plot: 0.0018. Area harvested: 0.0012.

Treatments:- (N as 'Nitro-Chalk')

	Total N (cwt)	No. of N dressings	No. of cuts
1	0.0	0	3
2	1.0	2	3
3	2.0	2	3
4	3.0	2	3
5	4.0	2	3
6	2.0	4	5
7	4.0	4	5
8	2.0	2	5
9	4.0	2	5

Basal applications: 1.0 cwt P_2O_5, 2.0 cwt K_2O as (0:10:20).

Cultivations, etc.: Basal PK applied: 29 Feb, 1968. N treatments applied: plots with 2 N dressings - 29 Feb, 28 May, plots with 4 N dressings: 29 Feb, 1 May, 28 May, 12 July. Cut plots with 3 cuts: 28 May, 16 Aug, 23 Oct, plots with 5 cuts: 1 May, 28 May, 12 July, 16 Aug, 23 Oct.

Standard error per plot. Dry matter:
Total of all cuts: 5.92 or 6.6% (24 d.f.)

68/C/43.2

SUMMARY OF RESULTS

DRY MATTER. TOTAL OF ALL CUTS

1	2	3	4	5	6	7	8	9	Mean
				(±2.96)					
13.3	67.9	115.6	127.3	136.0	74.4	113.6	61.9	100.1	90.0

Mean D.M. %: 3 cut plots: 23.1
5 cut plots: 19.4

68/Da/1.1

WINTER WHEAT

(BG)

Sowing dates and bulb fly, Stackyard 1968.

Design: 4 randomised blocks of 3 plots, split into 2 for covering to prevent egg-laying (unrandomised).

Area of each sub plot: 0.0121. Area harvested: 0.0064.

Treatments: All combinations of:-
Whole plots: 1. Sowing dates: 10 Oct, 1967 (E), 27 Nov (M), 20 Dec (L).
Seed rate 180 lb.
Sub plots: 2. Not covered (O), covered with polythene sheet to prevent egg-laying 1 July to mid-September 1967 (C).

NOTE: The O sub plots were sprayed with diquat (Reglone at 4 pints in 30 gals) on 29 Aug 1967 to control weeds.

Basal applications: 280 lb (6:15:15) combine drilled, 0.8 cwt N as 'Nitro-Chalk' top dressed in spring, ground chalk at 50 cwt. Seed dressed with organo-mercury fungicide only. Weed-killers: Ioxynil at 9 oz and mecoprop at 27 oz in 20 gals.

Cultivations, etc.: Rotary cultivated: 5 June and 22 June, 1967. Deep-tine cultivated: 30 June. Diquat applied to O sub plots: 29 Aug. Ploughed: 25 Sept. Ground chalk applied: 7 Oct. L plots rotary cultivated: 20 Dec. 'Nitro-Chalk' applied: 11 Apr, 1968. Ioxynil/mecoprop applied: 26 Apr. Combine harvested: 25 Aug. Variety: Cappelle.

NOTE: The populations of wheat bulb fly larvae were estimated from plant samples taken from uncovered plots.

Standard errors per plot. Grain:
Whole plot: 2.01 or 4.7% (6 d.f.)
Sub plot: 0.97 or 2.3% (9 d.f.)

68/Da/1.2

SUMMARY OF RESULTS

GRAIN

	E	M	L	Mean
		(1) and (2)		
O	46.0	40.7	39.5	42.1
C	47.2	42.4	39.9	43.2
Mean (±1.00)	46.6	41.6	39.7	42.6

(1) (±1.42) For use in vertical comparisons only
(2) (±0.49) For use in interaction comparisons only

Mean D.M. %: 84.0

68/Da/2.1

WINTER WHEAT

(RW 101)

Cultivations and bulb fly (Leptohylemyia coarctata) - Stackyard 1968.

Design: 4 randomised blocks of 3 plots.

Area of each plot: 0.0362. Area harvested: 0.0129.

Treatments: Tine cultivation, no ploughing (C), normal ploughing (P), scraped and ploughed (SP). All plots received a shallow rotary cultivation before drilling.

NOTE: The SP treatment was done by a special plough; the top 1-2 inches of soil were scraped into the open furrow just ahead of the plough.

Basal applications: 280 lb (6:15:15) combined drilled. 0.84 cwt N as 'Nitro-Chalk'. Ground chalk at 50 cwt. Weedkillers: Diquat (Reglone at 4 pints in 30 gals), paraquat at 0.75 lb ion in 32 gals, ioxynil/mecoprop (Actril C at 6 pints in 20 gals). Seed dressing: Organo-mercury fungicide only.

Cultivations, etc.: Rotary cultivated: 5 June, 1967. Diquat applied: 29 Aug. Paraquat applied: 3 Oct. Ground chalk applied: 7 Oct. P treatment ploughed, SP treatment scraped and ploughed: 11 Oct. C treatment deep-tine cultivated: 13 Oct. All plots rotary cultivated and spring-tine cultivated, seed drilled at 180lb: 21 Feb, 1968. 'Nitro-Chalk' applied: 11 Apr. Ioxynil/mecoprop applied: 15 May. Combine harvested: 8 Sept. Variety: Cappelle. Previous crops: Winter wheat 1966, fallow 1967.

NOTE: Samples were taken for wheat bulb fly eggs in February 1968.

Standard error per plot.
Grain: 2.46 or 9.4% (6 d.f.)

68/Da/2.2

SUMMARY OF RESULTS

GRAIN

C	P	SP	Mean
25.9	24.9 (±1.23)	28.0	26.2

Mean D.M. %: 79.5

68/Da/3.1

WINTER WHEAT

(RW 201)

Chlormequat and eyespot (Cercosporella herpotrichoides) - Claycroft 1968.

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

Area of each sub plot: 0.0145. Area harvested: 0.0076.

Treatments: All combinations of:-
Whole plots: 1. Chlormequat:* None (0), sprayed** in winter (A), in spring (S), in winter and in spring (AS).
Sub plots: 2. N: 100 (N1), 200 lb (N2) as 'Nitro-Chalk' in addition to basal.

* 2-chloroethyltrimethylammonium chloride (CCC).
** At 2 lb in 32 gals on each occasion.

Basal application: 410 lb (6:15:15) combine drilled.

Cultivations, etc.: Ploughed: 13 Sept, 1967. Seed drilled at 180 lb: 5 Oct. Sprayed with chlormequat: 5 Dec and 11 Mar, 1968. 'Nitro-Chalk' applied: 11 Apr. Combine harvested: 26 Aug. Variety: Champlein. Previous crops: Barley 1966 and 1967.

NOTE: Samples were taken in spring and summer for estimation of eyespot (Cercosporella herpotrichoides).

Standard errors per plot. Grain:
Whole plot: 2.96 or 7.4% (9 d.f.)
Sub plot: 2.59 or 6.5% (12 d.f.)

68/Da/3.2

SUMMARY OF RESULTS

GRAIN

	O	A	S	AS	Mean
		(1) and (2)			(±0.65)
N1	40.7	43.0	50.1	42.6	44.1
N2	34.1	35.8	34.0	37.9	35.5
Mean (±1.48)	37.4	39.4	42.1	40.3	39.8

(1) (±1.74) For use in horizontal and diagonal comparisons only

(2) (±1.30) For use in vertical and interaction comparisons only

Mean D.M. %: 83.6

68/Da/4.1

WINTER WHEAT

(RW 301)

Spun and drilled seed and cultivations - Whittlocks 1968.

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

Area of each sub plot: 0.0135. Area harvested: 0.0096.

Treatments:
Spun seed: All combinations of:-
Whole plots: 1. Seed rate: 170 lb (M), 235 lb (H).
Sub plots: 2. Seedbed cultivations: Deep-tine cultivate, spring-tine cultivate twice, sow, harrow (C1).
Deep-tine cultivate, spring-tine cultivate, sow, spring-tine cultivate, harrow (C2).
Deep-tine cultivate, spring-tine cultivate twice, harrow, sow, harrow (C3).
Deep-tine cultivate, sow, spring-tine cultivate twice, harrow (C4).
Drilled seed: All combinations of:-
Whole plot: 1. Seed rate: 150 lb (L), 190 lb (M).
Sub plot: 2. Seedbed cultivations: C1, C3 as above (in duplicate).

Basal applications: 220 lb (0:20:20). 0.84 cwt N as 'Nitro-Chalk' in spring.

Cultivations, etc.: Deep-tine cultivated (with wide points): 19 Oct, 1967. Deep-tine cultivated (with narrow points), basal PK compound applied: 24 Oct. Seed sown: 26 Oct. 'Nitro-Chalk' applied: 11 Apr, 1968. Combine harvested: 26 Aug. Variety: Cappelle. Previous crops: Barley 1966, spring beans 1967.

Standard error per plot. Grain:
Whole plot: 1.45 or 4.5% (6 d.f.)
Sub plot: 2.05 or 6.4% (40 d.f.)

SUMMARY OF RESULTS

GRAIN

SPUN SEED

	C1	C2	C3	C4	Mean
	(1) and (2)				(±0.73)
M	31.6	31.7	30.8	33.2	31.8
H	32.9	32.9	31.9	32.1	32.5
Mean (±0.73)	32.3	32.3	31.4	32.7	32.2

DRILLED SEED

	C1	C3	Mean
	(3) and (4)		(±0.73)
L	31.3	31.2	31.3
M	31.6	32.6	32.1
Mean (±0.51)	31.5	31.9	31.7

(1) (±1.26) (3) (±0.89) For use in vertical and diagonal comparisons only
(2) (±1.03) (4) (±0.73) For use in horizontal and interaction comparisons only

General mean: 31.9
General mean D.M. %: 84.1

68/Da/5.1

WINTER WHEAT

(RW 401)

Chlormequat, row spacing and N - Pastures 1968.

Design: 4 randomised blocks of 12 plots.

Area of each plot: 0.0212. Area harvested: 0.0140.

Treatments: All combinations of:-
1. Row spacing: 4 (C), 8 (W) inches.
2. Chlormequat*: None (O), sprayed at 2 lb in 32 gals (S).
3. N: 0.8 (N1), 1.6 (N2) 2.4 (N3) cwt as 'Nitro-Chalk'.

* 2-chloroethyltrimethylammonium chloride (CCC).

Basal applications: 340 lb (0:20:20) broadcast by drill. Ground chalk: 50 cwt to two southerly blocks, 100 cwt to two northerly. Weedkiller: Ioxynil/mecoprop (Actril C at 6 pints in 20 gals).

Cultivations, etc.: Ground chalk applied: 10 Oct, 1967. Deep-tine cultivated twice: 19 Oct. Basal PK applied, seed drilled at 180 lb: 24 Oct. Chlormequat applied: 28 Mar, 1968. 'Nitro-Chalk' applied: 22 Apr. Weedkiller applied: 26 Apr. Combine harvested: 25 Aug. Variety: Cappelle. Previous crops: Fallow 1966, potatoes 1967.

Standard error per plot.
Grain: 3.46 or 9.2% (33 d.f.)

68/Da/5.2

SUMMARY OF RESULTS

GRAIN

	O	S	N1	N2	N3	Mean
	(±1.00)			(±1.22)		(±0.71)
C	38.4	39.0	44.3	37.1	34.7	38.7
W	36.6	36.2	42.9	35.3	31.0	36.4
				(±1.22)		(±0.71)
		O	43.7	34.8	33.9	37.5
		S	43.4	37.5	31.8	37.6
		Mean (±0.87)	43.6	36.2	32.9	37.5

Mean D.M. %: 82.0

68/Da/6.1

WINTER WHEAT

(RW 501)

Varieties and N - Claycroft 1968.

Design: 4 randomised blocks of 5 plots, split into 3.

Area of each sub plot: 0.0121. Area harvested: 0.0064.

Treatments: All combinations of:-
Whole plots: 1. Varieties: Cappelle (CA), Champlein (CH), Joss Cambier (JC), Maris Ranger (MR), Maris Widgeon (MW).
Sub plots: 2. N: 0.6 (N2), 0.9 (N3), 1.2 (N4) cwt as 'Nitro-Chalk' in spring (in addition to basal).

Basal applications: 340 lb (6:15:15) combine drilled.

Cultivations, etc.: Ploughed: 13 Sept, 1967. Seed drilled at 180 lb: 24 Oct. 'Nitro-Chalk' applied: 18 Apr, 1968. Combine harvested: 27 Aug. Previous crops: Barley 1966 and 1967.

Standard errors per plot.
Grain: Whole plot: 1.27 or 3.4% (12 d.f.)
Sub plot: 1.81 or 4.9% (30 d.f.)

68/Da/6.2

SUMMARY OF RESULTS

GRAIN

	CA	CH	JC	MR	MW	Mean
			(1) and (2)			(±0.41)
N2	38.6	44.3	39.0	39.0	37.1	39.6
N3	35.7	40.7	37.1	39.8	31.4	36.9
N4	31.9	37.4	34.1	37.0	30.8	34.3
Mean (±0.63)	35.4	40.8	36.8	38.6	33.1	36.9

(1) (±0.97) For use in horizontal and diagonal comparisons only.
(2) (±0.91) For use in vertical and interaction comparisons only.

Mean D.M. %: 80.9

68/Da/7.1

SPRING WHEAT

(RW 451)

Chlormequat, row spacing and N - Geescroft 1968.

Design: 4 randomised blocks of 12 plots.

Area of each plot: 0.0212. Area harvested: 0.0140.

Treatments: All combinations of:-
1. Row spacing: 4 (C), 8 (W) inches.
2. Chlormequat*: None (O), sprayed at 2 lb in 32 gals (S).
3. N: 0.8 (N1), 1.6 (N2), 2.4 (N3) cwt as 'Nitro-Chalk'.

* 2-chloroethyltrimethylammonium chloride (CCC).

Basal applications: 340 lb (0:20:20) broadcast by drill. Weedkillers: Ioxynil/mecoprop (Actril C at 5 pints in 20 gals), barban (Carbyne at 2 pints in 33 gals).

Cultivations, etc.: Ploughed: 15 Sept, 1967. Basal PK applied, seed drilled at 160 lb: 11 Mar, 1968. 'Nitro-Chalk' applied: 21 Mar. Barban applied: 23 Apr. Ioxynil/mecoprop applied, chlormequat applied: 15 May. Combine harvested: 8 Sept. Variety: Kolibri. Previous crops: Fallow 1966, spring oilseed rape 1967.

NOTE: Samples were taken from each plot on 5 June and 3 July for leaf area, shoot height, fresh and dry weight and number of shoots, and for yields on 26 Aug.

Standard error per plot.
Grain: 2.36 or 6.1% (33 d.f.)

68/Da/7.2

SUMMARY OF RESULTS

GRAIN

	O	S	N1	N2	N3	Mean
	(±0.68)			(±0.83)		(±0.48)
C	35.4	41.6	39.1	38.2	38.2	38.5
W	34.0	43.0	37.4	40.7	37.5	38.5
				(±0.83)		(±0.48)
		O	36.4	34.9	32.8	34.7
		S	40.1	43.9	42.9	42.3
		Mean (±0.59)	38.2	39.4	37.9	38.5

Mean D.M. %: 76.3

68/Da/8.1

SPRING WHEAT

(RW 601)

Effect of gaps - Little Hoos 1968.

Design: 4 randomised blocks of 7 plots.

Area of each plot: 0.0121. Area harvested: 0.0121.

Treatments: Gapping of full plant at seedling stage (each plot 17 feet 6 inches wide, i.e. nominally 30 rows at 7 inches spacing, paths 1 foot wide between plots. The full width was harvested for yield).

No rows missing, 30 rows harvested	(G0)
8 rows missing, 7 (4) 8 (4) 7 harvested	(G4)
8 rows missing, 5 (2) 4 (2) 4 (2) 4 (2) 5 harvested	(G2)
8 rows missing, 4 (1) 2 (1) 2 (1) 2 (1) 2 (1) 2 (1) 2 (1) 2 (1) 4 harvested	(G1)
Gaps of 1 foot in row, equivalent to 8 rows per plot:-	
Evenly distributed in all rows	(GE)
Randomly distributed in all rows	(GR)
Highly aggregated throughout plot	(GA)

NOTE: (4) etc. indicate number of blank rows.

Basal applications: 340 lb (25:10:10) combine drilled. Weedkillers: Paraquat at 0.5 lb ion in 32 gals in winter. Mecoprop/2,4-D (Methoxone Extra at 6 pints in 32 gals).

Cultivations, etc.: Ploughed 5 - 18 Sept, 1967. Paraquat applied: 4 Dec. Seed drilled at 160 lb: 8 Apr, 1968. Mecoprop/2,4-D applied: 17 May. Combine harvested: 5 Sept. Variety: Kolibri. Previous crops: Potatoes 1966, spring wheat 1967.

Standard error per plot. Grain: 1.57 or 5.0% (18 d.f.)

68/Da/8.2

SUMMARY OF RESULTS

GRAIN

	G0	G4	G2	G1	GE	GR	GA	Mean
Mean	34.7	28.8	30.5	31.9	31.3	30.6	30.2	31.1
				(±0.79)				

Mean D.M. %: 76.3

68/Da/9.1

SPRING WHEAT

(RW 701)

Effects of paths and blank rows - Little Hoos 1968.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0161. Area harvested: 0.0107.

Treatments: All combinations of:-

1. Blank rows: None, 16 middle rows harvested (R0)
   2 blank rows, 3 (1) 16 (1) 3 sown (R1)
   4 blank rows, 2 (2) 16 (2) 2 sown (R2)
   6 blank rows, 1 (3) 16 (3) 1 sown (R3)
2. N: 0.6 (N1), 1.2 (N2) cwt side placed as 'Nitro-chalk'.

Plots were of 24 rows each, 16 of which were harvested. (1) etc. indicate number and position of blank (unsown) rows.

Basal applications: 280 lb (0:14:28) broadcast in seedbed.
Weedkiller: Paraquat at 0.5 lb ion in 32 gals in winter.
Mecoprop/2,4-D (Methoxone Extra at 6 pints in 32 gals).

Cultivations, etc.: Ploughed: 5 - 18 Sept, 1967. Paraquat applied: 4 Dec. Seed drilled at 185 lb, 'Nitro-Chalk' side placed, basal PK applied: 8 Mar, 1968. Mecoprop/2,4-D applied: 17 May. Combine harvested: 5 Sept. Variety: Kolibri. Previous crops: Potatoes 1966, spring wheat 1967.

Standard error per plot.
Grain: 0.95 or 2.8% (21 d.f.)

68/Da/9.2

SUMMARY OF RESULTS

GRAIN

	R0	R1	R2	R3	Mean
		(±0.47)			(±0.24)
N1	31.3	31.5	33.3	34.1	32.6
N2	31.9	34.7	36.0	36.5	34.8
Mean (±0.33)	31.6	33.1	34.7	35.3	33.7

Mean D.M. %: 78.6

68/Da/10.1

SPRING WHEAT

(RW 801)

Anhydrous ammonia as a fertiliser - Little Hoos 1968.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0321. Area harvested: 0.0210.

Treatments: All combinations of:-

1. Forms of N: Broadcast 'Nitro-Chalk' (B), injected anhydrous ammonia (I).
2. Levels of N: 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt N together with no nitrogen - without (NO), with (NOI), the injector running idle through the soil.

Basal applications: 280 lb (0:14:28) combine drilled. Weedkillers: Paraquat at 0.5 lb ion in 32 gals in winter. Mecoprop/2,4-D (Methoxone Extra at 6 pints in 32 gals).

Cultivations, etc.: Ploughed: 5 - 18 Sept, 1967. Paraquat applied: 4 Dec. Ammonia and 'Nitro-Chalk' applied, seed drilled at 185 lb: 7 Mar, 1968. Mecoprop/2,4-D applied: 17 May. Combine harvested: 5 Sept. Variety: Kloka. Previous crops: Potatoes 1966, spring wheat 1967.

Standard error per plot.
Grain: 1.28 or 4.7% (15 d.f.)

68/Da/10.2

SUMMARY OF RESULTS

GRAIN

	N1	N2	N3	Mean
		(±0.64)		(±0.37)
B	28.9	27.9	25.6	27.5
I	27.4	28.1	25.8	27.1
Mean (±0.45)	28.2	28.0	25.7	27.3

NO	NOI
18.5	19.3
(±0.64)	

General mean: 25.2

Mean D.M. %: 78.9

68/Da/11.1

SPRING WHEAT

(RW 901)

Varieties and N - Little Hoos 1968.

Design: 4 randomised blocks of 5 plots, split into 3.

Area of each sub plot: 0.0100. Area harvested: 0.0054.

Treatments: All combinations of:-
Whole plots: 1. Varieties: Kloka (KL), Kolibri (KO), Maris Ensign (ME), Rothwell Sprite (RS), Troll (TR).
Sub plots: 2. N: 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt N as basal NPK fertiliser plus 'Nitro-Chalk'.

Basal applications: 360 lb (15:15:15) combine drilled. Weedkillers: Paraquat at 0.5 lb ion in 32 gals in winter, mecoprop/2,4-D (Methoxone Extra at 6 pints in 32 gals).

Cultivations, etc.: Ploughed: 5 - 18 Sept, 1967. Paraquat applied: 4 Dec. Seed drilled at 160 lb: 14 Mar, 1968. 'Nitro-Chalk' applied: 22 Mar. Mecoprop/2,4-D applied: 17 May. Combine harvested: 4 Sept. Previous crops: Potatoes 1966, spring wheat 1967.

Standard errors per plot.
Grain: Whole plot: 0.81 or 2.6% (12 d.f.)
Sub plot: 1.61 or 5.2% (30 d.f.)

SUMMARY OF RESULTS

GRAIN

	KL	KD	ME	RS	TR	Mean
			(1) and (2)			(±0.36)
N1	30.9	34.5	28.2	28.8	28.7	30.2
N2	31.5	41.7	28.7	28.9	31.0	32.4
N3	29.4	41.0	24.9	23.9	30.0	29.9
Mean (±0.40)	30.6	39.1	27.3	27.2	29.9	30.8

(1) (±0.77) For use in horizontal and diagonal comparisons only
(2) (±0.81) For use in vertical and interaction comparisons only

Mean D.M. %: 76.6

68/Db/1.1

BARLEY

(RB 101)

Effects of paths and blank rows - West Barnfield I 1968.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0161. Area harvested: 0.0107.

Treatments: All combinations of:-

1. Blank rows: None, 16 middle rows harvested (R0)
   2 blank rows, 3(1) 16(1) 3 sown (R1)
   4 blank rows, 2(2) 16(2) 2 sown (R2)
   6 blank rows, 1(3) 16(3) 1 sown (R3)
2. N: 0.5 (N1), 1.0 (N2) cwt side placed as 'Nitro-Chalk.

Plots were of 24 rows each, 16 of which were harvested. (1) etc. indicate number and position of blank (unsown) rows.

Basal applications: 280 lb (0:20:20) broadcast in the seedbed. Weedkiller: Paraquat at 0.75 lb ion in 32 gals to stubble of preceding crop.

Cultivations, etc.: Weedkiller applied: 6 Oct, 1967. Ploughed: 23 Oct. Seed drilled at 145 lb, 'Nitro-Chalk' sideplaced, basal PK applied: 29 Feb, 1968. Combine harvested: 21 Aug. Variety: Maris Badger. Previous crops: Grass 1966, winter wheat 1967.

Standard error per plot.
Grain: 1.41 or 4.7% (21 d.f.)

SUMMARY OF RESULTS

GRAIN

	R0	R1	R2	R3	Mean
		(±0.71)			(±0.35)
N1	29.3	32.2	35.6	33.2	32.6
N2	26.8	27.2	28.8	29.4	28.0
Mean (±0.50)	28.1	29.7	32.2	31.3	30.3

Mean D.M. %: 81.7

68/Db/2.1

BARLEY

(RB 201)

Spun and drilled seed and cultivations - West Barnfield II 1968.

Design: 4 randomised blocks of 4 plots, with plots split into 4.

Area of each sub plot: 0.0135. Area harvested: 0.0096.

Treatments:
Spun seed: All combinations of:-
Whole plot: 1. Seed rate: 140 lb (M), 200 lb (H).
Sub plot: 2. Seedbed cultivations: Plough, spring-tine cultivate, harrow, sow, harrow (C1).
Plough, spring-tine cultivate, sow, spring-tine cultivate, harrow (C2).
Plough, spring-tine cultivate twice, sow, harrow (C3).
Plough, sow, spring-tine cultivate, harrow (C4).
Drilled seed: All combinations of:
Whole plot: 1. Seed rate: 112 lb (L), 140 lb (M).
2. Seedbed cultivations: C1, C3 above (in duplicate).

Basal applications: 340 lb (25:10:10). Weedkiller: Paraquat at 0.75 lb ion in 32 gals.

Cultivations, etc.: Weedkiller applied: 6 Oct, 1967. Ploughed: 23 Oct. Basal fertiliser applied: 29 Feb, 1968. Seed sown: 1 Mar. Combine harvested: 21 Aug. Variety: Maris Badger. Previous crops: Grass 1966, winter wheat 1967.

Standard errors per plot.
Grain: Whole plot: 1.34 or 3.9% (6 d.f.)
Sub plot: 1.90 or 5.6% (40 d.f.)

68/Db/2.2

SUMMARY OF RESULTS

GRAIN

SPUN SEED

	C1	C2	C3	C4	Mean
		(1) and (2)			(±0.67) [redacted]
M	30.3	34.6	31.7	37.1	33.4
H	30.9	35.2	32.6	35.8	33.7
Mean (±0.67)	30.6	34.9	32.2	36.5	33.6

DRILLED SEED

	C1	C3	Mean
	(3) and (4)		(±0.67) [redacted]
L	35.1	34.3	34.7
M	33.3	35.3	34.3
Mean (±0.47) [redacted]	34.2	34.8	34.5

(1) (±1.16) (3) (±0.82) [redacted] For use in vertical and diagonal comparisons
(2) (±0.95) (4) (±0.67) [redacted] For use in horizontal and interaction comparisons

General mean: 34.0
General mean D.M. %: 85.0

68/Db/3.1

BARLEY

(RB 301)

Varieties x N and eyespot (Cercosporella herpotrichoides) - Long Hoos IV 1968.

Design: 4 blocks of 4 plots, split into 3.

Area of each sub plot: 0.0121. Area harvested: 0.0063.

Treatments: All combinations of:-
Whole plots: 1. Varieties: Impala (IM), Maris Badger (MB), Sultan (SU), Zephyr (ZE).
Sub plots: 2. Nitrogen: 0.6 (N2), 0.9 (N3), 1.2 (N4) cwt N as 'Nitro-Chalk'.

Basal applications: 2 cwt (0:20:20) combine drilled. Weedkiller: Paraquat at 0.5 lb ion in 32 gals.

Cultivations, etc.: Ploughed: 6 Sept, 1967. Weedkiller applied: 4 Dec. Seed drilled at 140 lb: 28 Feb, 1968. 'Nitro-Chalk' applied: 15 Mar. Combine harvested: 20 Aug. Previous crops: Spring beans 1966, winter wheat 1967.

NOTE: Samples were taken in June for the incidence and severity of eyespot (Cercosporella herpotrichoides).

Standard errors per plot. Grain:
Whole plot: 2.22 or 7.3% (9 d.f.)
Sub plot: 2.30 or 7.6% (24 d.f.)

68/Db/3.2

SUMMARY OF RESULTS

GRAIN

	IM	MB	SU	ZE	Mean
		(1) and (2)			(±0.57)
N2	33.2	29.0	35.0	35.8	33.2
N3	29.5	25.0	31.4	34.0	30.0
N4	27.2	20.7	32.4	30.3	27.6
Mean (±1.11)	30.0	24.9	32.9	33.3	30.3

(1) (±1.45) For use in horizontal and diagonal comparisons
(2) (±1.15) For use in vertical and interaction comparisons

Mean D.M. %: 78.1

68/Db/4.1

BARLEY

(RB 401 & WB 201)

Deep drilled fertiliser - Rothamsted (R) Great Knott II and Woburn (W), Schoolfield, 1968.

Design: 4 randomised blocks of 10 plots.

Area of each plot: Great Knott II (R): 0.0080. Area harvested: 0.0080
Schoolfield (W): 0.0061. 0.0080.

Treatments: All combinations of:-
1. Methods of fertiliser application: Injected deeply *(I), broadcast (B).
2. Fertiliser rates: 224 lb (1), 448 lb (2) (25:10:10).
3. Row spacing: 4 (C), 8 (W) inches.

Together with fertiliser combine-drilled at rate 1 (D1W) or rate 2 (D2W), row spacing 7 inches.

* by 'Tume' drill in rows 5.5 ins. apart.

Basal applications: Great Knott II (R): None. Schoolfield (W): Weedkiller: Paraquat at 0.5 lb ion in 33 gals, ioxynil/mecoprop (Actril C at 5 pints in 25 gals).

Cultivations, etc.:-
Great Knott II (R): Ploughed: 19 Sept, 1967. Fertiliser treatments applied, seed drilled at 140 lb: 7 Mar, 1968. Combine harvested: 19 Aug. Variety: Zephyr. Previous crops: Spring beans 1966, winter wheat 1967.
Schoolfield (W): Ploughed: 25 Sept, 1967. Paraquat applied: 2 Mar, 1968. Fertiliser treatments applied, seed drilled at 140 lb: 8 Mar. Ioxynil/mecoprop applied: 27 Apr. Combine harvested: 21 Aug. Variety: Zephyr. Previous crops: Barley 1966 and 1967.

Standard errors per plot. Grain:
Great Knott II (R): 3.33 or 9.2% (27 d.f.)
Schoolfield (W): 1.91 or 8.6% (27 d.f.)

68/Db/4.2

SUMMARY OF RESULTS

GRAIN

	GREAT KNOTT II (R)	SCHOOLFIELD (W)
	(±1.66)	(±0.96)
I1C	37.1	25.7
I1W	34.4	23.3
I2C	38.7	21.6
I2W	34.2	21.8
B1C	36.4	24.5
B1W	34.7	21.9
B2C	40.5	22.4
B2W	36.0	18.2
D1W	37.1	24.2
D2W	32.5	18.2
Mean	36.2	22.2
Mean D.M. %:	77.2	79.5

68/Db/5.1

BARLEY

(WB 101)

Varieties and N - Woburn Great Hill Bottom I, 1968.

Design: 4 blocks of 4 plots, split for N.

Area of each sub plot: 0.0024. Area harvested: 0.0013.

Treatments: All combinations of:-
Whole plots: 1. Varieties: Impala (I), Maris Badger (MB), Sultan (S), Zephyr (Z).
Sub plots: 2. Nitrogen: 0.6 (N2), 0.9 (N3), 1.2 (N4) cwt N as 'Nitro-Chalk'.

Basal applications: 4 cwt (15:15:15) combine drilled. Weedkillers: Paraquat at 0.5 lb ion in 33 gals, ioxynil/mecoprop (Actril C at 5 pints in 25 gals).

Cultivations, etc.: Deep-tine cultivated: 25 Sept, 1967. Ploughed: 20 Feb, 1968. Paraquat applied: 2 Mar. Seed combine drilled at 140 lb: 7 Mar. 'Nitro-Chalk' applied: 14 Mar. Ioxynil/mecoprop applied: 3 May. Combine harvested: 22 Aug. Previous crops: Fallow 1966, potatoes 1967.

Standard errors per plot.
Grain: Whole plot: 3.14 or 11.9% (9 d.f.)
Sub plot: 4.10 or 15.6% (24 d.f.)

68/Db/5.2

SUMMARY OF RESULTS

GRAIN

	I	MB	S	Z	Mean
		(1) and (2)			(±1.03)
N2	25.4	22.7	30.2	28.3	26.6
N3	23.7	23.9	40.8	24.2	28.1
N4	20.7	20.6	32.0	22.8	24.0
Mean (±1.57)	23.3	22.4	34.3	25.1	26.3

(1) (±2.29) For use in horizontal and diagonal comparisons only
(2) (±2.05) For use in vertical and interaction comparisons only

Mean D.M. %: 82.9

68/Dc/1.1

SPRING BEANS

(RBe 101 and WBe 101)

The effect on yield of inoculating beans with different strains of Rhizobium leguminosarum - Rothamsted (R) Summerdells II and Woburn (W) Roadpiece 1968.

Design: 4 randomised blocks of 6 plots.

Area of each plot: 0.0202. Area harvested: Summerdell II (R) - 0.0152 Roadpiece (W) - 0.0127.

Treatments: Seed inoculum (Rhizobium leguminosarum):-

None	(0)
Strain 1013	(1)
Strain 1026	(2)
Strain 1027	(3)
Strain 1034	(4)
Strain VSP	(5)

Basal applications: 360 lb (0:14:28) placement drilled. Weedkiller: Simazine at 1 lb in 33 gals. Roadpiece (W): Insecticide: Demeton-s-methyl at 3.4 oz in 37 gals.

Cultivations, etc.:

Summerdells II (R): Ploughed: 26 Sept, 1967. Seed drilled at 200 lb: 7 Mar, 1968. Weedkiller applied: 8 Mar. Combine harvested: 12 Sept. Variety: Tarvin. Previous crops: Fallow 1966, winter wheat 1967.

Roadpiece (W): Ploughed: 9 Nov, 1967. Seed drilled at 200 lb, weedkiller applied: 1 Mar, 1968. Insecticide applied: 1 June. Combine harvested: 13 Sept. Variety: Tarvin. Previous crops: Barley 1966, spring wheat 1967.

NOTE: Counts of Rhizobium leguminosarum in soil were made in March before sowing.

Standard errors per plot. Grain:

Summerdells II (R): 1.21 or 4.8% (15 d.f.)
Roadpiece (W): 1.92 or 6.9% (15 d.f.)

68/Dc/1.2

SUMMARY OF RESULTS

GRAIN

0	1	2	3	4	5	Mean
			SUMMERDELLS II (R)			
25.6	24.9	26.0	24.8	25.7	23.9	25.2
		(±0.61)				
			ROADPIECE (W)			
27.3	27.1	27.6	29.8	28.5	27.3	27.9
		(±0.96)				

Mean D.M. %: Summerdells II (R): 79.4
Roadpiece (W): 76.6

68/Dc/2.1

SPRING BEANS

(WBe 201)

The effect of B-Nine*, irrigation, nitrogen and its time of application on the yield and growth of spring beans - Woburn Butt Close Series II, 1968.

Design: 3 replicates o 2 x 2 x 4 in 6 blocks of 2 whole plots split into 2 and further split into 2.

Area of each sub plot: 0.0121. Area harvested: 0.0064.

Treatments: All combinations of:-

Whole plots: 1. Irrigation: None (O), full irrigation (C).

Half plots: 2. B-Nine*: None (O), B-Nine at 5 lb in 35 gals at four leaf stage, and three weeks later (S).

Quarter plots: 3. Nitrogen: None (O), 1.5 cwt N in the seedbed (E), 1.5 cwt N in late May (L), 1.5 cwt N in the seedbed, 1.5 cwt N in late May (EL), N as 'Nitro-Chalk'.

* (N-dimethylaminosuccinamic acid).

Basal applications: 360 lb (0:14:28) placed. Weedkiller: Simazine at 0.75 lb in 33 gals. Insecticide: Demeton-s-methyl at 3.5 oz in 37 gals. Magnesian limestone at 22.5 cwt.

Cultivations, etc.: Ploughed: 19 Sept, 1967. Magnesian limestone applied: 25 Oct. Deep-tine cultivated: 26 Oct, 10 Nov. 'Nitro-Chalk' applied to E and EL plots, seed drilled at 200 lb: 28 Feb, 1968. Weedkiller applied: 1 Mar. B-Nine applied: 15 May. 'Nitro-Chalk' applied to L and EL plots: 29 May. B-Nine applied: 5 June. Insecticide applied: 13 June. C plots irrigation applied at 0.5 inches: 14 June, 0.75 inches: 20 July. Combine harvested: 13 Sept. Variety: Tarvin. Previous crops: Spring wheat 1967, potatoes 1966.

NOTES: (1) Germination counts were made and scores made for nodulation and root growth. Stem and pod counts were made and stem height measured.

(2) 1000 grain wts. and percentage N in the grain were taken.

(3) Counts of free living nematodes were taken after harvest.

(4) After the first application of B-Nine there was evidence of weedkiller damage from residues left in the sprayer, most severe on the first plots sprayed. Because of this the first two half plots sprayed were treated as missing plots and estimated values used in the analysis.

Standard error per plot (pooled).
Grain: 2.25 or 8.2% (26 d.f.)

68/Dc/2.2

SUMMARY OF RESULTS

GRAIN

	O	S	O	E	L	EL	Mean
	(±0.65)		(±0.92)				(±0.46)
O	27.7	26.4	26.1	29.8	23.5	28.9	27.1
C	28.2	27.3	28.2	27.5	26.6	28.6	27.7
			(±0.92)				(±0.46)
		O	28.6	28.8	24.0	30.4	27.9
		S	25.7	28.5	26.1	27.2	26.9
		Mean (±0.65)	27.1	28.7	25.0	28.8	27.4

	O				C			
	O	E	L	EL	O	E	L	EL
	(±1.30)							
O	27.9	30.8	21.7	30.3	29.3	26.8	26.2	30.4
S	24.2	28.8	25.2	27.6	27.1	28.2	26.9	26.9

Mean D.M. %: 77.8

68/Dc/3.1

SPRING BEANS

(MC)

B-Nine* and nitrogen, Summerdells II 1968.

* Dimethylamino-succinamic acid, a dwarfing compound, formerly known as DSA.

Design: 2 randomised blocks of 18 plots.

Area of each plot: 0.0022. Area harvested: 0.0005.

Treatments: All combinations of:-
1. B-Nine: Unsprayed (O), sprayed on 3 occasions with B-Nine at 4 lb in 56 gals (S).
2. Nitrogen: None (N0), 1.5 (N1), 3.0 (N2) cwt N as 'Nitro-Chalk'.
3. Time of application of N: All in seedbed (E), all in late May (L), half in seedbed, half in late May (EL).

Basal applications: 360 lb (0:14:28) placement drilled. Weedkiller: Simazine at 1 lb in 33 gals.

Cultivations, etc.: Ploughed: 26 Sept, 1967. Seed drilled at 200 lb: 6 Mar, 1968. Weedkiller applied: 8 Mar. 'Nitro-Chalk' applied to E and EL plots: 12 Mar. S plots sprayed with B-Nine: 14 May. 'Nitro-Chalk' applied to EL and L plots: 27 May. S plots sprayed with B-Nine: 7 June and 3 July. Harvested by hand: 9 Sept. Variety: Tarvin. Previous crops: Fallow 1966, winter wheat 1967.

NOTE: Observations were made of stem height, number of stems and of pods. 1000 grain weights and percentage N in the grain were determined.

Standard error per plot.
Grain: 3.19 or 11.4% (17 d.f.)

68/Dc/3.2

SUMMARY OF RESULTS

GRAIN

	NO	N1	N2	E	L	EL	Mean
		(±1.30)			(±1.59)		(±0.75)
O	24.6	29.0	29.2	30.1	29.6	27.5	27.6
S	27.2	29.9	28.5	28.1	30.9	28.7	28.5
					(±1.59)		(±0.92)
		N1		29.6	31.4	27.5	29.5
		N2		28.6	29.1	28.8	28.8
		Mean (±1.13)		29.1	30.3	28.1	28.1

Mean D.M. %: 72.9

NOTE: The (E L EL) (OS) table is meaned over N1 and N2 only. The means for O and S are meaned over NO, N1 and N2.

68/Dd/1.1

WINTER OILSEED RAPE

(RRa 101)

Row spacing, N and K - Delafield 1968.

Design: A single replicate of 3 x 3 x 3 x 3 in 9 blocks of 9 plots.

Area of each plot: 0.0193. Area harvested: 0.0138.

Treatments: All combinations of:-

1. Row spacing: 4 (C), 8 (M), 16 (W) inches.
2. Levels of K: 0.5 (K1), 1.0 (K2), 1.5 (K3) cwt K2O as muriate of potash (including basal).
3. Levels of N: 1.0 (N2), 1.5 (N3), 2.0 (N4) cwt N as 'Nitro-Chalk' (in addition to basal).
4. Time of applying N: Early (E), late (L), split dressing, half applied early and half late (EL).

Basal applications: 350 lb (8:20:16) in seedbed.

Cultivations, etc.: Ploughed: 14 Sept, 1967. Basal NPK and test K applied: 23 Sept. Seed drilled at 8 lb: 25 Sept. 'Nitro-Chalk' applied (E and EL treatments): 20 Feb, 1968. 'Nitro-Chalk' applied (EL and L treatments): 4 Apr. Combine harvested: 19 Aug. Variety: Victor. Previous crops: Barley 1966 and 1967.

Standard errors per plot:

Grain (at 90% dry matter):	2.89 or 17.7% (13 d.f.)
Yield of fixed oil, lb per acre:	139.23 or 18.2% (13 d.f.)

68/Dd/1.2

SUMMARY OF RESULTS

GRAIN

	K1	K2	K3	N2	N3	N4	E	L	EL	Mean
	(±0.96)			(±0.96)			(±0.96)			(±0.56)
C	15.3	18.1	16.2	15.6	16.6	17.4	16.3	18.6	14.6	16.5
M	16.4	16.3	16.0	14.0	16.0	18.7	16.2	15.9	16.6	16.2
W	14.6	15.5	18.5	14.1	14.8	19.8	17.5	15.9	15.2	16.2
				(±0.96)			(±0.96)			(±0.56)
		K1		13.5	16.1	16.7	15.4	15.7	15.2	15.4
		K2		15.3	15.5	19.1	17.0	17.4	15.5	16.6
		K3		14.8	15.7	20.1	17.6	17.4	15.8	16.9
							(±0.96)			(±0.56)
					N2		14.2	15.5	13.9	14.5
					N3		16.1	15.7	15.6	15.8
					N4		19.6	19.3	17.0	18.6
Mean (±0.56)							16.7	16.8	15.5	16.3

Mean D.M. %: 80.6

68/Dd/1.3

% FIXED OIL

	K1	K2	K3	N2	N3	N4	E	L	EL	Mean
C	43.7	43.3	43.2	43.8	43.2	43.3	43.3	43.3	43.5	43.4
M	43.2	43.4	43.6	44.1	43.2	42.9	43.6	43.1	43.5	43.4
W	43.3	43.1	43.5	44.0	43.3	42.6	43.3	43.1	43.5	43.3
		K1		44.0	43.3	42.9	43.4	43.4	43.5	43.4
		K2		43.7	43.2	42.9	43.5	42.9	43.4	43.3
		K3		44.1	43.1	43.0	43.3	43.3	43.6	43.4
					N2		44.0	43.8	44.0	43.9
					N3		43.1	43.0	43.5	43.2
					N4		43.1	42.7	43.0	42.9
Mean							43.4	43.2	43.5	43.4

68/Dd/1.4

YIELD OF FIXED OIL

	K1	K2	K3	N2	N3	N4	E	L	EL	Mean
		(±46.4)			(±46.4)			(±46.4)		(±26.8)
C	724	844	755	735	775	813	765	870	687	774
M	763	767	752	665	746	871	761	742	779	761
W	681	722	867	668	692	910	815	741	714	757
					(±46.4)			(±46.4)		(±26.8)
		K1		641	754	772	723	733	712	722
		K2		720	726	887	798	806	729	778
		K3		706	733	935	819	814	740	791
								(±46.4)		(±26.8)
					N2		675	732	661	689
					N3		753	730	730	737
					N4		914	891	790	865
Mean (±26.8)							780	784	727	764

68/Dd/2.1

SPRING OILSEED RAPE

(RRa 201)

Row spacing, N, K and seed rate - Long Hoos V 1968.

Design: A single replicate of 2 x 3 x 3 x 3 in 3 blocks of 18 plots.

Area of each plot: 0.0193. Area harvested: 0.0138.

Treatments: All combinations of:-
1. Seed rate: 5 lb (S), 10 lb (D).
2. Row spacing: 4 (C), 8 (M), 16 (W) inches.
3. K (in addition to basal): None (K1), 0.5 (K2), 1.0 (K3) cwt K2O as muriate of potash.
4. N: 1.0 (N5), 1.4 (N7), 1.8 (N9) cwt N as 'Nitro-Chalk'.

Basal applications: 280 lb (0:20:20) broadcast, 4 tons ground chalk. Weedkiller: Paraquat at 0.5 lb ion in 32 gals. Insecticide: Malathion at 18 oz in 38 gals.

Cultivations, etc.: Ploughed: 6 Sept, 1967. Weedkiller applied: 4 Dec. Chalked: 20 Feb, 1968. Basal PK applied: 29 Feb. Muriate of potash applied, seed drilled: 12 Mar. 'Nitro-Chalk' applied: 22 Mar. Insecticide applied: 11 June. Combine harvested: 27 Aug. Variety: Nilla. Previous crops: Fallow 1966, winter and spring wheat 1967.

Standard errors per plot.
Grain (at 90% dry matter): 2.27 or 13.1% (8 d.f.)
Yield of fixed oil, lb per acre: 88.8 or 12.7% (7 d.f.)

68/Dd/2.2

SUMMARY OF RESULTS

GRAIN

	C	M	W	K1	K2	K3	N5	N7	N9	Mean
	(±0.76)			(±0.76)			(±0.76)			(±0.44)
S	17.6	16.7	17.6	17.1	17.1	17.6	16.8	18.2	16.9	17.3
D	17.7	18.4	16.3	18.2	18.0	16.3	17.6	17.5	17.3	17.5
				(±0.93)			(±0.93)			(±0.54)
		C		17.6	17.7	17.6	16.9	17.8	18.2	17.6
		M		17.8	17.5	17.2	17.5	17.9	17.1	17.5
		W		17.5	17.4	16.0	17.1	17.8	16.0	17.0
								(±0.93)		(±0.54)
					K1		17.8	18.2	16.9	17.7
					K2		17.3	18.0	17.3	17.5
					K3		16.4	17.3	17.1	16.9
Mean (±0.54)							17.2	17.8	17.1	17.4

Mean D.M. %: 79.6

68/Dd/2.3

% FIXED OIL

	C	M	W	K1	K2	K3	N5	N7	N9	Mean
S	36.4	36.2	36.1	35.5	36.5	36.8	36.8	37.0	35.0	36.2
D	36.3	36.9	35.9	36.3	36.4	36.4	37.0	36.7	35.5	36.4
		C		36.0	36.6	36.6	37.2	36.7	35.3	36.4
		M		36.1	36.7	36.8	37.7	37.1	34.9	36.6
		W		35.6	36.1	36.3	35.8	36.7	35.6	36.0
					K1		36.6	36.2	34.9	35.9
					K2		37.2	36.9	35.3	36.5
					K3		37.0	37.3	35.5	36.6
Mean						36.9	36.8	35.2	36.3	

68/Dd/2.4

YIELD OF FIXED OIL

	C	M	W	K1	K2	K3	N5	N7	N9	Mean
		(±29.6)			(±29.6)			(±29.6)		(±17.1)
S	704	665	702	673	688	711	679	739	653	690
D	707	746	677	726	719	686	749	706	676	710
					(±36.3)			(±36.3)		(±20.9)
		C		701	708	708	696	716	706	706
		M		709	707	700	726	732	658	705
		W		688	695	686	721	719	629	690
								(±36.3)		(±20.9)
					K1		719	728	651	699
					K2		707	729	673	703
					K3		716	710	669	698
Mean (±20.9)							714	722	664	700

68/De/1.1

POTATOES

(RP 1/1)

Effect of gaps - Great Harpenden II 1968.

Design: 5 blocks of 2 split into 6.

Area of each plot: 0.0067. Area harvested: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Time of gapping: At emergence on 30 May (E), at flowering on 5 July (F).
Sub plots: 2. Amount of gapping: Normal plant population (G0), 4 (G4), 8 (G8), 12 (G12), 16 (G16), 24 (G24) per cent of plants removed.

Basal applications: 3 tons ground chalk, 7 tons FYM, 8 cwt (13:13:20). Weedkiller: Paraquat at 0.5 lb ion plus linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 36 gals on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz applied with mancozeb on one occasion.

Cultivations, etc.:- FYM applied: 8 Dec, 1967. Ground chalk applied, ploughed: 20 Dec. Basal NPK applied: 20 - 27 Mar, 1968. Rotary cultivated, potatoes machine planted: 8 Apr. Weedkiller applied: 4 May. Grubbed: 17 June. Rotary ridged: 18 June. Mancozeb applied: 5 July. Mancozeb and demeton-s-mehtyl applied: 19 July. Mancozeb applied: 5 Aug. Sprayed with undiluted BOV at 15 gals: 5 Sept. Lifted: 17 Oct. Variety: Majestic. Previous crops: Grass 1959 - 1967.

Standard errors per plot. Total tubers:
Whole plot: 0.774 or 5.3% (4 d.f.)
Sub plot: 1.174 or 8.0% (40 d.f.)

68/De/1.2

SUMMARY OF RESULTS

	G0	G4	G8	G12	G16	G24	Mean
			TOTAL TUBERS				
			(1) and (2)				(±0.379)
E		15.11	15.61	14.67	14.18	14.45	14.80
F		15.55	14.60	13.79	13.11	13.25	14.06
Mean (±0.371)	15.30	15.33	15.10	14.23	13.64	13.85	14.58*

(1) (±0.591) For use in vertical and diagonal comparisons only
(2) (±0.525) For use in horizontal and interaction comparisons only

			% WARE				
E		97.8	97.9	98.0	97.8	98.5	98.0
F		98.2	98.3	98.1	98.0	98.4	98.2
Mean	97.9	98.0	98.1	98.0	97.9	98.4	98.1*

* General mean

POTATOES

(RP 2/1)

Effects of gangrene (Phoma spp.) - Long Hoos I and II, 1968.

Design: 6 blocks of 2 plots split into 4.

Area of each plot: 0.0067. Area harvested: 0.0033.

Treatments: All combinations of:-
Sub blocks: 1. Varieties: King Edward (KE), Majestic (M).
Plots: 2. Levels of seed infection (Gangrene): Clean (A), moderately infected (B), severely infected (C), unselected stock (D).

Basal applications: 10 cwt (13:13:20). Weedkiller: Paraquat at 0.38 lb ion plus linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz in 37 gals applied with mancozeb on one occasion.

Cultivations, etc.: Deep-tine cultivated twice: 2 Oct, 1967. Ploughed: 4 - 23 Jan, 1968. Basal NPK compound applied: 14 Mar. Plots rotary cultivated, potatoes machine planted: 11 Apr. Weedkiller applied: 4 May. Plots grubbed and rotary ridged: 17 June. Mancozeb applied: 4 July. Mancozeb and demeton-s-methyl applied: 19 July. Mancozeb applied: 5 Aug. Sprayed with undiluted BOV at 15 gals: 31 Aug. Lifted: 14 Oct. Previous crops: Lucerne and cocksfoot 1966, fallow 1967.

NOTE: Emergence counts were made on 20 May and 13 June. After burning off and prior to lifting, counts were made of stem and plant number.

Standard errors per plot. Total tubers:
Whole plot: 0.726 or 4.6% (5 d.f.)
Sub plot: 0.955 or 6.1% (30 d.f.)

68/De/2.2

SUMMARY OF RESULTS

	A	B	C	D	Mean
		TOTAL TUBERS			
		(1) and (2)			(±0.296)
KE	18.08	16.55	12.91	13.80	15.34
M	17.66	16.09	13.57	16.58	15.98
Mean (±0.276)	17.87	16.32	13.24	15.19	15.66

(1) (±0.449) For use in vertical and diagonal comparisons
(2) (±0.390) For use in horizontal and interaction comparisons

		% WARE			
KE	96.5	94.7	95.2	95.2	95.4
M	98.3	97.6	96.6	97.8	97.6
Mean	97.4	96.1	95.9	96.5	96.5

68/De/3.1

POTATOES

(RP 3/1)

Effects of stem-canker (Rhizoctonia solani) - Long Hoos I and II, 1968.

Design: 6 blocks of 2 plots split into 4.

Area of each plot: 0.0033. Area harvested: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Varieties: King Edward (KE), Majestic (M).
Sub-plots: 2. Levels of seed infection (Rhizoctonia solani): Clean (A), moderately infected (B), severely infected (C), unselected stock (D). B and C were assessed from sclerotia on skin.

Basal applications: 10 cwt (13:13:20) Weedkiller: Paraquat at 0.38 lb ion plus linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions: Insecticide: Demeton-s-methyl at 3.5 oz applied with mancozeb on one occasion.

Cultivations, etc.: Deep-tine cultivated twice: 2 Oct,1967. Ploughed: 4 - 23 Jan, 1968. Basal NPK applied: 14 Mar. Plots rotary cultivated, potatoes machine planted: 11 Apr. Weedkiller applied: 4 May. Grubbed and rotary ridged: 17 Jun. Mancozeb applied: 4 July. Mancozeb and demeton-s-methyl applied: 19 July. Mancozeb applied: 5 Aug. Sprayed with undiluted BOV at 15 gals: 31 Aug. Lifted: 14 Oct. Previous crops: Lucerne and cocksfoot 1966, fallow 1967.

NOTE: Emergence counts were made on 20 May and 13 June. A count of the number of plants infected with Corticium solani (the perfect stage of Rhizoctonia solani) was made on 22 July. After burning off and prior to lifting, counts were made of stem and plant number.

Standard errors per plot. Total tubers:
Whole plot: 0.617 or 3.3% (5 d.f.)
Sub plot: 1.247 or 6.7% (30 d.f.)

SUMMARY OF RESULTS

	A	B	C	D	Mean
		TOTAL TUBERS			
		(1) and (2)			(±0.252)
KE	21.32	19.19	19.92	21.09	20.38
M	16.70	17.00	16.48	16.73	16.73
Mean (±0.360)	19.01	18.10	18.20	18.91	18.55

(1) ±0.508 for use in vertical and diagonal comparisons
(2) ±0.509 for use in horizontal and interaction comparisons

	% WARE				
KE	95.8	96.1	96.0	95.6	95.9
M	98.0	97.5	97.4	98.3	97.8
Mean	96.9	96.8	96.7	97.0	96.8

68/De/4.1

POTATOES

(RP 4/1)

Effects of skin-spot (Oospora pustulans) - Long Hoos I and II, 1968.

Design: 6 blocks of 2 plots split into 4.

Area of each sub-plot: 0.0033. Area harvested: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Varieties: King Edward (KE), Majestic (M).
Sub-Plots: 2. Levels of seed infection (Oospora pustulans): Clean (A), moderately infected (B), severely infected (C), unselected stock (D). B and C were assessed by area covered by skin-spots.

Basal applications: 10 cwt (13:13:20). Weedkiller: Paraquat at 0.38 lb ion plus linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz applied with mancozeb on one occasion.

Cultivations, etc.: Deep-tine cultivated twice: 2 Oct, 1967. Ploughed: 4 - 23 Jan, 1968. Basal NPK applied: 14 Mar. Plots rotary cultivated, potatoes machine planted: 9 Apr. Weedkiller applied: 4 May. Grubbed and rotary ridged: 17 June. Mancozeb applied: 4 July. Mancozeb and demeton-s-methyl applied: 19 July. Mancozeb applied: 5 Aug. Sprayed with undiluted BOV at 15 gals: 31 Aug. Lifted: 15 Oct. Previous crops: Lucerne and cocksfoot 1966, fallow 1967.

NOTE: Emergence counts were made on 20 May and 13 June. After burning off and prior to lifttttting, counnn

SUMMARY OF RESULTS

	A	B	C	D	Mean
	TOTAL TUBERS				
	(1) and (2)				(±0.153)
KE	21.46	19.80	17.01	20.08	19.59
M	17.24	17.17	13.18	15.73	15.83
Mean (±0.292)	19.35	18.49	15.10	17.90	17.71

(1) (±0.389) For use in vertical and diagonal comparisons only
(2) (±0.413) For use in horizontal and interaction comparisons only

	% WARE				
KE	96.9	97.2	97.8	96.9	97.2
M	98.0	98.0	97.9	97.6	97.9
Mean	97.4	97.6	97.8	97.3	97.5

68/De/5.1

POTATOES

(RP 5/1 and WP 3/1)

Commercial, dipped and healthy stocks - Rothamsted (R) Great Harpenden II and Woburn (W) Lansome III, 1968.

Design: 4 randomised blocks of 6 plots, split into 3.

Area of each sub plot: 0.0036. Area harvested: Rothamsted - 0.0036, Woburn - 0.0036.

Treatments: All combinations of:-

Whole plots: 1. Seed: Healthy (free from Oospora and Rhizoctonia) (O), healthy, reinfected with Oospora (CO), healthy, reinfected with Rhizoctonia (CR), once-grown, from Rothamsted farm (F), the same, dipped in fungicide (FD), stock seed (S).

Sub plots: 2. Varieties: King Edward (KE), Majestic (M), Pentland Dell (PD).

Basal applications:

Great Harpenden II (R): 3 tons ground chalk, 7 tons FYM, 8 cwt (13:13:20). Weedkiller: Paraquat at 0.5 lb ion plus linuron at 0.75 lb in 40 gals. Fungicide: Mancozeb at 1.2 lb in 40 gals on 3 occasions.

Lansome III (W): 10 cwt (13:13:20). Weedkiller: Paraquat at 0.38 lb ion plus linuron at 0.5 lb in 50 gals. Fungicide: Mancozeb at 1.2 lb in 38 gals on 3 occasions.

Cultivations, etc.:-

Great Harpenden II (R): FYM applied: 8 Dec, 1967. Ground chalk applied, plots ploughed: 20 Dec. Basal NPK compound applied: 20 Mar, 1968. Plots rotary cultivated, potatoes planted, plots rotary ridged: 22 Apr. Weedkiller applied: 6 May. Fungicide applied: 5 July, 22 July, 5 Aug. Sprayed with undiluted BOV at 15 gals: 5 Sept. Lifted: 16 Oct. Previous crops: Grass 1959 - 67.

Lansome III (W): Spring-tine cultivated: 11 Mar, 1968. Basal NPK compound applied: 16 Mar. Plots rotary cultivated, potatoes planted: 17 Apr. Grubbed: 25 Apr. Ridged: 26 Apr. Weedkiller

applied: 3 May. Fungicide applied: 12 July, 18 July, 30 July. Sprayed with undiluted BOV at 15 gals: 16 Aug. Lifted: 30 Sept. Previous crops: Spring wheat 1966, fallow 1967.

NOTE: Emergence counts were made on 29 May on Lansome III (W) and on 4 June on Great Harpenden II (R).

Standard errors per plot. Total tubers:

Great Harpenden I (R):	Whole plot:	1.107 or 6.0%	(15 d.f.)
	Sub plot:	1.867 or 10.2%	(36 d.f.)
Lansome III (W):	Whole plot:	1.157 or 8.2%	(15 d.f.)
	Sub plot:	1.354 or 9.6%	(36 d.f.)

68/De/5.3

SUMMARY OF RESULTS

GREAT HARPENDEN II (R)

	O	CO	CR	F	FD	S	Mean
			TOTAL TUBERS				
			(1) and (2)				(±0.381)
KE	19.11	18.68	17.62	18.28	17.86	20.99	18.76
M	19.32	19.35	17.09	17.21	18.61	13.23	17.47
PD	18.85	19.15	18.46	18.72	18.41	20.00	18.93
Mean (±0.554)	19.10	19.06	17.73	18.07	18.29	18.07	18.39

(1) (±0.942) For use in horizontal and diagonal comparisons
(2) (±0.934) For use in vertical and interaction comparisons

			% WARE				
KE	96.9	98.3	96.7	97.1	96.1	97.7	97.1
M	98.3	98.9	98.6	98.9	97.9	98.0	98.4
PD	98.5	99.0	98.9	97.9	97.5	99.3	98.5
Mean	97.9	98.7	98.0	98.0	97.2	98.4	98.0

68/De/5.4

LANSOME III (W)

	O	CO	CR	F	FD	S	Mean
	TOTAL TUBERS						
	(1) and (2)						(±0.276)
KE	13.60	14.51	12.63	12.45	12.82	13.75	13.29
M	17.15	17.49	17.51	16.60	15.56	14.01	16.39
PD	13.07	13.10	13.03	12.87	11.74	12.24	12.68
Mean (±0.579)	14.60	15.03	14.39	13.98	13.38	13.33	14.12

(1) (±0.800) For use in horizontal and diagonal comparisons
(2) (±0.677) For use in vertical and interaction comparisons

% WARE

KE	56.5	65.0	55.6	59.6	57.3	73.5	61.2
M	84.1	85.5	86.0	85.9	79.1	87.6	84.7
PD	64.1	70.9	78.5	73.6	57.9	76.8	70.3
Mean	68.3	73.8	73.3	73.0	64.8	79.3	72.1

68/De/6.1

POTATOES

(RP 6/1)

Coiled sprout and Verticillium nubilum - Great Harpenden II 1968.

Design (each variety): 4 blocks of 2 split into 6.

Area of each sub plot: 0.0029. Area harvested: 0.0029.

Treatments: 4 blocks of Arran Pilot, 4 of Pentland Dell. All combinations of:-

Whole plots: 1. Weed control: By cultivation (see below under 'Cultivations etc.') (WO), by pre-emergence weedkiller (Paraquat at 0.5 lb ion plus linuron at 0.75 lb in 36 gals) (WW).

Sub plots: 2. Seed treatment (seed of the same stock, differentially chitted): Chitted, coil prone (CP), chitted non-coil prone (CO), unchitted, non-coil prone (OO).

3. Fungus inoculation: Seed tubers dipped in water (O), dipped in suspension of Verticillium nubilum (F).

Basal applications: 3 tons ground chalk, 7 tons FYM, 8 cwt (13:13:20).
Fungicide: Mancozeb at 1.2 lb in 40 gals on 3 occasions.

Cultivations, etc.: FYM applied: 8 Dec, 1967. Ground chalk applied, plots ploughed: 20 Dec. Basal NPK compound applied: 20 - 27 Mar, 1968. Rotary cultivated, potatoes planted, rotary ridged: 22 Apr. WO plots chain-harrowed: 23 Apr. Weedkiller applied to WW plots: 6 May. WO plots grubbed: 20 May, mechanically weeded: 24 May, rotary ridged: 28 May, grubbed: 7 June, rotary ridged: 10 June. WW plots grubbed: 17 June. WW plots ridged with ridging bodies (Pentland Dell plots only): 18 June. Sprayed with mancozeb: 5 July, 22 July, 5 Aug. Sprayed with undiluted BOV at 15 gals: 21 Aug. Lifted (Pentland Dell only): 16 Oct.
Previous crops: Grass 1959 - 67.

NOTE: No yields were taken from the Arran Pilot plots which were sampled fortnightly to assess the rate of bulking and incidence of coiled sprout and Verticillium nubilum.

Standard errors per sub plot.
Total tubers: 1.097 or 8.5% (30 d.f.)

68/De/6.2

SUMMARY OF RESULTS

PENTLAND DELL

	CP	CO	OO	O	F	Mean
			TOTAL TUBERS			
	(±0.388)*			(±0.317)*		(±0.306)
WO	10.27	15.20	13.37	13.65	12.25	12.95
WW	9.25	16.28	13.17	13.42	12.38	12.90
				(±0.388)		(±0.274)
		CP		10.09	9.44	9.76
		CO		16.97	14.51	15.74
		OO		13.53	13.00	13.27
Mean (±0.224)				13.53	12.32	12.92

* For use in horizontal and interaction comparisons only

68/De/6.3

PENTLAND DELL

	CP	CO	OO	O	F	Mean
			% WARE			
O	96.8	98.0	93.4	96.0	96.1	96.1
W	97.1	98.6	93.4	96.6	96.2	96.4
		CP		97.0	96.9	97.0
		CO		98.4	98.2	98.3
		OO		93.5	93.2	93.4
Mean				96.3	96.1	96.2

68/De/7.1

POTATOES

(RP 7/1)

Warm water treated seed - Long Hoos I and II 1968.

Design: 4 randomised blocks of 6 plots.

Area of each plot: 0.0033. Area harvested: 0.0033.

Treatments: None (0) and all combinations of:-
1. Warm water treatment: 45 (L), 50 (M) degrees C.
2. Duration of water treatment: 20 (2), 30 (3) minutes. Also 55 degrees C (H) for 10 minutes (1).

Basal applications: 10 cwt (13:13:20). Weedkiller: Paraquat at 0.38 lb ion plus linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz applied with mancozeb on one occasion.

Cultivations, etc. Deep-tine cultivated twice: 2 Oct, 1967. Ploughed: 4 - 23 Jan, 1968. Basal NPK compound applied: 14 Mar. Rotary cultivated, potatoes machine planted: 9 Apr. Grubbed and rotary ridged: 17 June. Mancozeb applied: 4 July. Mancozeb and demeton-s-methyl applied: 19 July. Mancozeb applied: 5 Aug. Sprayed with undiluted BOV at 15 gals: 31 Aug. Lifted: 15 Oct. Variety: Majestic. Previous crops: Lucerne and cocksfoot 1966, fallow 1967.

NOTE: Emergence counts were made.

Standard error per plot.
Total tubers: 1.601 or 9.3% (15 d.f.)

68/De/7.2

SUMMARY OF RESULTS

0	L2	L3	M2	M3	H1	Mean
			TOTAL TUBERS			
18.49	21.48	19.93	19.33	7.72	16.68	17.27
		(±0.800)				
			% WARE			
96.3	96.6	96.8	95.8	93.9	96.6	96.0

POTATOES

(RP 8/1)

Chemicals and seed-borne fungi - Long Hoos I and II 1968.

Design: 3 randomised blocks of 16 plots.

Area of each plot: 0.0033. Area harvested: 0.0033.

Treatments: None (O)

Seed treated in autumn:

Chemical	Percentage		
Agallol	0.5	Solution	(A)
Aardisan	0.5	Solution	(B)
Thiabendazole lactate (S4)	0.1	Solution	(C)
Thiabendazole lactate (S4)	0.01	Solution	(D)
Thiabendazole (W7)	0.1	Solution	(E)
Aardisol	2.0	Solution	(F)
Aretanol	2.0	Solution	(G)
Trametan	50.0	Dust	(H)
Vitavax	0.45	Suspension	(J)
Plantvax	0.45	Suspension	(K)
Polyram	7.0	Dust	(L)

Seed treated in spring (April) with 10 per cent dusts of the following chemicals:

Plantvax	(M)
Vitavax	(N)
F 849	(P)
EF 1991	(Q)

NOTE: Dusts were applied at 10 lb per ton of seed, the solutions and suspensions by immersing the seed tubers for 5 minutes. In the cases of Agallol and Aardisan the time of immersion was 45 seconds. The seed rate was approximately one ton per acre.

Basal applications: 10 cwt (13:13:20). Weedkiller: Paraquat at 0.38 lb ion plus linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz applied with mancozeb on one occasion.

Cultivations, etc.: Deep-tine cultivated twice: 2 Oct, 1967. Ploughed: 4 - 23 Jan, 1968. Basal NPK compound applied: 14 Mar. Rotary cultivated, potatoes machine planted: 8 Apr. Weedkiller applied: 4 May. Grubbed and rotary ridged: 17 June. Mancozeb applied: 4 July. Mancozeb and demeton-s-methyl applied: 19 July. Mancozeb applied: 5 Aug. Sprayed with undiluted BOV at 15 gals: 31 Aug. Lifted: 15 Oct. Variety: King Edward. Previous crops: Lucerne and cocksfoot 1966, fallow 1967.

NOTE: Emergence counts were made.

Standard error per plot.
Total tubers: 1.021 or 5.6% (30 d.f.)

68/De/8.2

SUMMARY OF RESULTS

	TOTAL TUBERS	% WARE
	(±0.590)	
O	18.51	95.3
A	16.86	94.5
B	19.27	94.6
C	20.59	96.2
D	20.16	95.9
E	18.26	95.0
F	17.30	95.5
G	16.72	95.5
H	19.85	95.5
J	18.61	95.6
K	19.64	95.5
L	20.04	95.3
M	14.59	94.5
N	16.33	96.0
P	16.15	97.0
Q	18.39	95.8
Mean	18.20	95.5

POTATOES

(RP 10/1)

Effects of aphids - Great Harpenden II 1968.

Design: 4 x 4 Latin square.

Area of each plot: 0.0274. Area harvested: 0.0035.

Treatments: All combinations of:-
1. Insecticide applied early: None (O), 1.5 lb phorate as granules applied at planting (E).
2. Insecticide applied late: None (O), sprayed with demeton-s-methyl at 3.5 oz in 37 gals on 5 July (L).

Basal applications: 3 tons ground chalk, 7 tons FYM, 8 cwt (13:13:20). Weedkiller: Paraquat at 0.5 lb ion and linuron at 0.75 lb in 36 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions.

Cultivations, etc.: FYM applied: 8 Dec, 1967. Chalk applied, plots ploughed: 20 Dec. Basal NPK compound applied: 20 Mar, 1968. Plots rotary cultivated, potatoes machine planted: 11 Apr. Weedkiller applied: 4 May. Rotary ridged: 10 June. Mancozeb applied: 5 July, 19 July, 5 Aug. Sprayed with undiluted BOV at 15 gals: 21 Aug. Lifted: 18 Oct. Variety: King Edward. Previous crops: Grass 1959 - 67.

NOTE: Aphids were counted on leaves removed from potato plants.

Standard error per plot.
Total tubers: 0.648 or 4.2% (6 d.f.)

68/De/9.2

SUMMARY OF RESULTS

	O	L	Mean
	TOTAL TUBERS		
	(±0.324)		(±0.229)
O	15.53	15.55	15.54
E	15.49	15.68	15.59
Mean (±0.229)	15.51	15.62	15.56
	% WARE		
O	95.8	96.3	96.0
E	96.1	95.1	95.6
Mean	96.0	95.7	95.8

68/De/10.1

POTATOES

(RP 11/1)

Comparison of fungicides - Great Harpenden II 1968.

Design: 6 x 6 Latin square.

Area of each plot: 0.0129. Area harvested: 0.0086.

Treatments:

No fungicide	(O)
Fentin acetate at 0.21 lb plus maneb at 0.07 lb	(A)
Fentin acetate at 0.07 lb plus maneb at 0.021 lb	(B)
Fentin acetate at 0.07 lb plus maneb at 0.021 lb plus 7 lb wax	(C)
Dibutyltin dilaurate at 0.07 lb a.i.	(D)
Triphenyltin sulphide at 0.028 lb a.i.	(E)

All the above were applied in 70 gals on two occasions.

Basal applications: 3 tons ground chalk, 7 tons FYM, 8 cwt compound (13:13:20). Weedkiller: Paraquat at 0.38 lb ion and linuron at 0.75 lb in 36 gals.

Cultivations, etc.: FYM applied: 8 Dec, 1967. Ground chalk applied, plots ploughed: 20 Dec. Basal compound fertiliser applied: 20 - 27 Mar, 1968. Rotary cultivated, potatoes machine planted: 1 Apr. Weedkiller applied: 3 May. Grubbed: 7 June. Rotary ridged: 10 June. Fungicides applied: 20 July, 15 Aug. Sprayed with undiluted BOV at 15 gals: 31 Aug. Lifted: 17 Oct. Variety: King Edward. Previous crops: Grass 1959 - 67.

Standard error per plot.
Total tubers: 0.900 or 7.0% (20 d.f.)

68/De/10.2

SUMMARY OF RESULTS

O	A	B	C	D	E	Mean
			TOTAL TUBERS			
			(±0.367)			
12.09	13.46	12.66	13.08	12.50	12.98	12.79
			% WARE			
95.5	95.9	95.8	95.3	96.0	95.5	95.7

POTATOES

(RP 12/1)

Post-planting cultivations - Long Hoos I and II, 1968.

Design: 4 randomised blocks of 5 plots, split into 2.

Area of each sub plot: 0.0064. Area harvested: 0.0032.

Treatments: All combinations of:-

Whole plots:

1. Treatment of ridges (immediately after planting):

Undisturbed	(O)
Grubbed	(G)
Rolled	(R)
Rolled and grubbed	(RG)
Chain harrowed and grubbed	(HG)

Sub plots:

2. Grubbing and rotary ridging (just before tops meet in rows): None (RO), grubbed and rotary ridged (RR).

Basal applications: 10 cwt (13:13:20). Weedkiller: Paraquat at 0.38 lb ion and linuron at 0.75 lb in 37 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on three occasions. Insecticide: Demeton-s-methyl at 3.5 oz (applied with mancozeb on one occasion).

Cultivations, etc.: Deep-tine cultivated twice: 2 Oct, 1967. Ploughed: 4 - 23 Jan, 1968. Basal NPK applied: 14 Mar. Rotary cultivated: 2 Apr, Potatoes machine planted: 4 Apr. Treatments G, R, RG, HG applied: 6 Apr. Weedkiller applied: 3 May. 'RR' plots grubbed: 7 June. 'RR' plots rotary ridged: 10 June. Fungicide applied: 5 July. Fungicide and insecticide applied: 19 July. Fungicide applied: 5 Aug. Sprayed with undiluted BOV at 15 gals: 21 Aug. Lifted: 21 Oct. Variety: King Edward. Previous crops: Lucerne and cocksfoot 1966, fallow 1967.

Standard errors per plot.

Total tubers:	Whole plot:	1.019 or 5.3%	(12 d.f.)
	Sub plot:	1.588 or 8.2%	(15 d.f.)

SUMMARY OF RESULTS

	O	G	R	RG	HG	Mean
			TOTAL TUBERS			
			(1) and (2)			(±0.355)
RO	18.66	18.96	19.96	19.40	18.69	19.13
RR	19.80	20.18	20.10	18.18	19.95	19.64
Mean (±0.510)	19.23	19.57	20.03	18.79	19.32	19.39

(1) (±0.758) For use in horizontal and diagonal comparisons only
(2) (±0.794) For use in vertical and interaction comparisons only

			% WARE			
RO	95.7	94.8	95.0	95.2	95.4	95.2
RR	96.1	96.5	96.1	95.8	95.7	96.0
Mean	95.9	95.6	95.5	95.5	95.5	95.6

68/De/12.1

POTATOES

(RP 13/1 and WP 2/1)

Varieties, nitrogen and scab (Streptomyces scabies) - Rothamsted (R) Pastures and Woburn (W) Great Hill Bottom I 1968.

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

Area of each sub plot: 0.0120. Area harvested: Pastures (R): 0.0028, Great Hill Bottom I (W): 0.0029.

Treatments: All combinations of:-
Whole plots: 1. Varieties: King Edward (KE), Majestic (M), Pentland Dell (PD).
Sub plots: 2. N: None (N0), 1.0 (N1), 2.0 (N2) cwt as 'Nitro-Chalk'.

Basal applications: 6 cwt (0:14:28).
Pastures (R): Weedkillers: Paraquat at 0.75 lb ion in 32 gals. Paraquat at 0.38 lb ion plus linuron at 0.75 lb in 40 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions. Insecticide: Demeton-s-methyl at 3.5 oz in 37 gals applied with mancozeb on one occasion.
Great Hill Bottom I (W): Weedkillers: Paraquat at 0.5 lb ion in 33 gals. Linuron at 0.5 lb plus paraquat at 0.38 lb ion in 50 gals. Fungicide: Mancozeb at 1.2 lb in 38 gals on 2 occasions.

Cultivations, etc.:
Pastures (R): Paraquat applied: 3 Oct, 1967. Ploughed: 29 Oct. Basal PK compound applied: 22 Mar, 1968. 'Nitro-Chalk' applied, plots rotary cultivated, potatoes machine planted: 1 Apr. Paraquat and linuron applied: 3 May. Plots grubbed: 6 June. Plots rotary ridged: 10 June. Mancozeb applied: 4 July. Mancozeb and demeton-s-methyl applied: 19 July. Mancozeb applied: 5 Aug. Sprayed with undiluted BOV at 15 gals: 21 Aug. Lifted: 4 Oct. Previous crops: Fallow 1966, barley 1967.

Great Hill Bottom I (W): Deep-tine cultivated: 25 Sept, 1967. Ploughed: 20 Feb, 1968. Paraquat applied: 3 Mar. Basal PK compound applied: 22 Mar. 'Nitro-Chalk' applied: 3 Apr. Plots rotary cultivated, potatoes planted: 4 Apr. Linuron and paraquat applied: 2 May. Grubbed and rotary ridged: 15 June. Fungicide applied: 18 and 30 July. Sprayed with undiluted BOV at 15 gals: 15 Aug. Lifted: 4 Oct. Previous crops: Fallow 1966, potatoes 1967.

NOTE: Assessments of surface area of tubers affected by scab (Streptomyces scabies) were made at harvest.

Standard errors per plot. Total tubers:

Pastures (R):	Whole plot:	0.285 or 1.7% (6 d.f.)
	Sub plot:	1.012 or 6.0% (18 d.f.)
Great Hill Bottom I (W):	Whole plot:	0.776 or 8.4% (6 d.f.)
	Sub plot:	1.401 or 15.2% (18 d.f.)

SUMMARY OF RESULTS

PASTURES (R)

	N0	N1	N2	Mean
		TOTAL TUBERS		
		(1) and (2)		(±0.143)
KE	13.79	20.68	19.93	18.14
M	13.28	14.76	15.36	14.46
PD	15.15	18.13	19.86	17.71
Mean (±0.292)	14.07	17.86	18.38	16.77

(1) (±0.437) For use in vertical and diagonal comparisons
(2) (±0.506) For use in horizontal and interaction comparisons

		% WARE		
KE	93.2	96.4	95.7	95.1
M	96.7	97.6	96.7	97.0
PD	98.2	99.0	98.9	98.7
Mean	96.0	97.7	97.1	96.9

68/De/12.4

GREAT HILL BOTTOM I (W)

	N0	N1	N2	Mean
		TOTAL TUBERS		
		(1) and (2)		(±0.388)
KE	5.84	10.25	12.36	9.48
M	7.13	10.49	10.27	9.29
PD	6.36	9.13	11.20	8.90
Mean (±0.404)	6.44	9.96	11.27	9.22

(1) (±0.691) For use in vertical and diagonal comparisons
(2) (±0.700) For use in horizontal and interaction comparisons

		% WARE		
KE	81.7	85.8	91.4	86.3
M	90.3	92.2	94.8	92.4
PD	89.8	92.9	94.8	92.5
Mean	87.3	90.3	93.7	90.4

68/De/13.1

POTATOES

(WP 1/1)

The effect of chemicals on common scab - Woburn Great Hill Bottom I 1968.

Design: 4 blocks of 6 plots.

Area of each plot: 0.0064. Area harvested: 0.0021.

Treatments:-
Chemicals: None (O), quintozene at 150 lb (A), captan at 50 lb (B), captan at 150 lb (C), drazoxolon at 150 lb (D), O,O-diethylphthalimidophosphonothioate at 150 lb (E).

Basal applications: Weedkiller: Paraquat at 0.5 lb ion in 33 gals. 10 cwt (13:13:20). Weedkiller: Linuron at 0.5 lb plus paraquat at 0.37 lb ion in 50 gals. Fungicide: Mancozeb at 1.2 lb in 38 gals, applied twice.

Cultivations, etc.: Deep-tine cultivated: 25 Sept, 1967. Ploughed: 20 Feb, 1968. Paraquat applied: 3 Mar. NPK applied: 22 Mar. Chemical treatments applied, rotary cultivated, potatoes planted: 11 Apr. Linuron plus paraquat applied: 3 May. Rotary ridged: 15 June. Fungicide applied: 18 July, 30 July. Sprayed with undiluted BOV at 15 gals: 16 Aug. Lifted: 4 Oct. Variety: Maris Piper. Previous crops: Fallow 1966, potatoes 1967.

NOTE: Scab counts were made.

Standard error per plot.
Total tubers: 0.907 or 7.4% (15 d.f.)

68/De/13.2

SUMMARY OF RESULTS

O	A	B	C	D	E	Mean
			TOTAL TUBERS			
			(±0.453)			
12.62	14.22	12.75	12.04	11.16	10.36	12.19
			% WARE			
90.2	91.9	91.3	89.6	85.5	84.4	88.8

68/De/14.1

POTATOES

(WP 401)

Fumigants and nutrients - Woburn Stackyard D (clean site), Great Hill III (infested site), 1968.

Design: At each site 2 blocks of 2 plots, each split into 3.

Area of each sub plot: 0.0021. Area harvested: 0.0011.

Treatments: All combinations of:-
Whole plots: 1. Fumigant: None (O), methyl bromide at 870 lb (F).
Sub plots: 2. NPK: 2 cwt (13:13:20) (T1), 10 cwt (13:13:20) (T2), 10 cwt (13:13:20) plus 100 lb Mg as Epsom salts (T2Mg).

Basal applications: Weedkiller: Paraquat at 0.5 lb ion in 33 gals before ploughing (Great Hill III only). Weedkiller: Linuron at 0.5 lb plus paraquat at 0.37 lb ion in 50 gals. Fungicide: Mancozeb at 1.2 lb in 38 gals (on three occasions). Insecticide: Demeton-s-methyl at 3.5 oz applied with fungicide on one occasion.

Cultivations, etc.:
Stackyard D: Mg applied: 8 Feb, 1968. NPK applied: 1 Apr. Rotary cultivated, methyl bromide applied: 5 Apr. Potatoes planted: 9 Apr. Linuron plus paraquat applied: 3 May. Earthed up: 14 June. Fungicide plus insecticide applied: 12 July. Fungicide applied: 18 July, 30 July. Sprayed with undiluted BOV at 15 gals: 4 Sept. Lifted: 31 Oct. Variety: King Edward. Previous crops: Fallow 1966 and 1967.
Great Hill III: Paraquat applied: 22 Sept, 1967. Subsoiled: 26 - 27 Sept. Ploughed: 7 - 9 Nov. Mg applied: 8 Feb, 1968. NPK applied: 1 Apr. Rotary cultivated, methyl bromide applied: 5 Apr. Potatoes planted: 9 Apr. Linuron plus paraquat applied: 2 May. Rotary ridged: 13 June. Fungicide plus insecticide applied: 12 July. Fungicide applied: 18 July, 30 July. Sprayed with undiluted BOV at 15 gals: 4 Sept. Lifted: 4 Nov. Variety: King Edward. Previous crops: Potatoes 1966, spring wheat 1967.

NOTES: (1) Soil samples were taken in March and September for cyst and egg counts of Heterodera rostochiensis.
(2) Plant samples were taken in July for counts of white cysts.

Standard errors per sub plot. Total tubers:

Stackyard D, clean site:	3.640 or 21.5% (4 d.f.)
Great Hill III, infected site:	1.560 or 11.2% (4 d.f.)

SUMMARY OF RESULTS

STACKYARD D

	T1	T2	T2MG	Mean
	TOTAL TUBERS			
	(1) and (2)			(±0.945)
O	11.56	19.95	20.00	17.17
F	10.31	18.96	20.94	16.74
Mean (±1.820)	10.94	19.46	20.47	16.95

(1) (±2.305) For use in vertical and diagonal comparisons only
(2) (±2.574) For use in horizontal and interaction comparisons only

	% WARE			
O	74.4	87.9	82.4	81.6
F	68.3	79.2	82.4	76.6
Mean	71.4	83.5	82.4	79.1

68/De/14.3

GREAT HILL III

	T1	T2	T2MG	Mean
	TOTAL TUBERS			
	(1) and (2)			(±2.210)
O	6.15	11.25	12.14	9.84
F	14.64	19.17	20.42	18.07
Mean (±0.780)	10.39	15.21	16.28	13.96

(1) (±2.386) For use in vertical and diagonal comparisons only
(2) (±1.103) For use in horizontal and interaction comparisons only

	% WARE			
O	51.3	72.2	74.5	66.0
F	71.9	79.8	78.0	76.5
Mean	61.6	76.0	76.2	71.3

68/Df/1.1

GRASS

(RG 101)

Anhydrous and aqueous ammonia, Parklands 1968.

Design: 3 randomised blocks of 26 plots.

Area of each plot: 0.0092. Area harvested: 0.0054.

Treatments: None (NO) (2 plots per block) and all combinations of:-

1. Nitrogen fertiliser and time of application:
   - Applied in autumn:
     - Injected anhydrous ammonia (20 Nov) (IAA)
     - Injected aqueous ammonia (8 Nov) (IQA)
   - Applied in spring:
     - Injected anhydrous ammonia (14 Mar) (IAS)
     - Injected aqueous ammonia (12 Mar) (IQS)
   - Broadcast 'Nitro-Chalk':
     - Applied in 3 equal dressings (BD)
     - Applied as single dressing (BS)
2. N: 2.0 (N2), 3.0 (N3), 4.0 (N4), 5.0 (N5) cwt (total for the season).

Basal applications: 900 lb (0:14:28) in winter.

Cultivations, etc.: Basal PK compound applied: 1 Jan, 1968. 'Nitro-Chalk' applied (treatment BS and first dressing of BD): 15 Mar. Cut three times: 22 May, 9 July, 14 Sept. 'Nitro-Chalk' applied after first two cuts for BD treatment. Previous crop: Grassland for at least 35 years.

NOTE: Grass samples were taken to determine dry matter and percentage of N, P and K. Percentage of Mg was determined in some samples.

Standard errors per plot. Dry matter:

1st cut:	2.71 or 7.9% (46 d.f.)
2nd cut:	2.09 or 7.8% (46 d.f.)
3rd cut:	3.18 or 14.6% (46 d.f.)
Total of 3 cuts:	4.97 or 6.0% (46 d.f.)

68/Df/1.2

SUMMARY OF RESULTS

	IAA	IQA	IAS	IQS	BD	BS	Mean
			1ST CUT				
			(±1.56)				(±0.64)
N2	34.1	34.2	35.8	33.8	34.0	31.1	33.8
N3	35.7	35.4	31.8	35.0	33.5	30.6	33.7
N4	36.5	36.6	31.3	34.6	32.8	34.9	34.4
N5	33.5	38.3	32.7	34.3	34.5	33.5	34.5
Mean (±0.78)	34.9	36.1	32.9	34.4	33.7	32.5	34.1

NO: 21.2 (±1.11)

General mean: 33.1
Mean D.M. %: 14.2

			2ND CUT				
			(±1.20)				(±0.49)
N2	23.9	27.4	27.9	26.2	25.2	25.3	26.0
N3	26.3	27.3	27.8	28.5	26.5	28.7	27.5
N4	26.7	28.4	28.6	27.4	26.8	27.8	27.6
N5	26.4	25.9	27.9	25.6	25.6	26.0	26.2
Mean (±0.60)	25.8	27.3	28.0	26.9	26.0	27.0	26.8

NO: 18.2 (±0.85)

General mean: 26.2
Mean D.M. %: 15.6

	IAA	IQA	IAS	IQS	BD	BS	Mean
			3RD CUT				
			(±1.84)				(±0.75)
N2	23.0	23.5	21.9	23.3	19.5	21.7	22.1
N3	21.3	22.4	22.2	24.1	20.3	23.0	22.2
N4	19.9	24.1	23.4	22.7	18.5	20.0	21.5
N5	22.1	21.8	22.2	21.5	19.7	21.2	21.4
Mean (±0.92)	21.6	23.0	22.4	22.9	19.5	21.5	21.8

NO: 23.5 (±1.30)

General mean: 21.9
Mean D.M. %: 16.6

			TOTAL OF 3 CUTS				
			(±2.87)				(±1.17)
N2	81.0	85.1	85.6	83.3	78.7	78.0	81.9
N3	83.3	85.2	81.8	87.6	80.3	82.4	83.4
N4	83.1	89.1	83.2	84.6	78.1	82.7	83.5
N5	82.0	86.0	82.9	81.4	79.8	80.7	82.1
Mean (±1.44)	82.3	86.4	83.4	84.2	79.2	80.9	82.7

NO: 62.8 (±2.03)

General mean: 81.2
Mean D.M. %: 15.5

68/Df/2.1

GRASS

(RG 201)

Nitrogen and damage to sward by ammonia-injectors - Parklands 1968.

Design: 1 randomised block of 18 plots.

Area of each plot: 0.0092. Area harvested: 0.0054.

Treatments: All combinations of:-
1. Mechanical damage by injector: None (IO), damage by 'Anhydrous' injector (IA), by 'Aqua' injector (IQ).
2. Time of damage: In autumn (A), in spring (S).
3. Nitrogen per cut: 0.3 (N1), 0.6 (N2), 1.0 (N3) cwt as 'Nitro-Chalk' broadcast by hand.

Basal applications: 900 lb (0:14:28) applied in winter.

Cultivations, etc.: Autumn injector slits made - 'aqua': 8 Nov, 1967, 'anhydrous': 21 Nov. Basal PK compound applied: 23 Jan, 1968. Spring injector slits made - 'aqua': 12 Mar, 'anhydrous': 14 Mar. 'Nitro-Chalk' applied: 15 Mar. Cut three times: 22 May, 9 July, 14 Sept. 'Nitro-Chalk' applied after first two cuts. Previous crop: Grassland for at least 35 years.

NOTE: Grass samples were taken for dry matter and percentage of N.

Standard errors per plot.

Dry matter:

1st cut:	1.73 or 5.2% (4 d.f.)
2nd cut:	2.72 or 10.4% (4 d.f.)
3rd cut:	5.38 or 23.4% (4 d.f.)
Total of 3 cuts:	8.01 or 9.8% (4 d.f.)

68/Df/2.2

SUMMARY OF RESULTS

DRY MATTER

	IA	IQ	N1	N2	N3	Mean
			1ST CUT			
	(±1.00)			(±1.22)		(±0.71)
A	33.0	33.0	29.3	34.7	35.1	33.0
S	30.8	34.6	31.8	33.9	32.4	32.7
				(±1.22)		(±0.71)
	O		28.9	35.9	34.2	33.0
	IA		28.8	34.7	32.1	31.9
	IQ		32.2	33.8	35.4	33.8
Mean (±0.71)			30.0	34.8	33.9	32.9
			2ND CUT			
	(±1.57)			(±1.92)		(±1.11)
A	25.4	25.9	26.3	24.7	25.9	25.6
S	26.2	26.6	27.5	25.3	26.5	26.4
				(±1.92)		(±1.11)
	O		26.8	26.5	26.2	26.5
	IA		25.5	25.1	26.9	25.8
	IQ		28.3	24.9	25.5	26.3
Mean (±1.11)			26.9	25.5	26.2	26.2

Mean D.M. %: 1st cut: 15.2
2nd cut: 15.8

68/Df/2.3

DRY MATTER

	IA	IQ	N1	N2	N3	Mean
			3RD CUT			
	(±3.11)			(±3.81)		(±2.20)
A	20.3	24.3	23.3	20.3	23.4	22.3
S	22.9	26.6	27.1	25.5	21.7	24.8
				(±3.81)		(±2.20)
	O		25.2	17.7	22.4	21.8
	IA		25.3	19.2	20.3	21.6
	IQ		25.1	26.6	24.8	25.5
Mean (±2.20)			25.2	21.2	22.5	23.0
			TOTAL OF 3 CUTS'			
	(±4.62)			(±5.66)		(±3.27)
A	78.7	83.2	78.8	79.7	84.4	81.0
S	79.9	87.9	86.4	84.7	80.7	83.9
				(±5.66)		(±3.27)
	O		80.9	80.2	82.7	81.3
	IA		79.6	79.1	79.3	79.3
	IQ		85.7	85.3	85.8	85.6
Mean (±3.27)			82.0	81.5	82.6	82.0

Mean D.M. %: 3rd cut: 17.7
Total of 3 cuts: 16.2

68/E/1.1

METEOROLOGICAL RECORDS 1968 - ROTHAMSTED

(Departure from long period means in brackets)

Month	Total sunshine: hours	Mean temperature: °F Air(1)	Dew point	In ground 1 ft.	4ft.	Ground(2) frosts	Total rainfall:in. 1/1000 acre gauge	Rain(3) days	Drainage through 20 in. soil:in.	Wind(4) m.p.h.
Jan	38 (-14.4)	37.9 (+0.7)	33.9	39.3	43.6	17	2.58 (+0.08)	20	2.61	6.4
Feb	43 (-24.5)	34.7 (-3.5)	31.5	38.0	42.7	24	0.96 (-0.96)	12	0.72	5.8
Mar	134 (+17.7)	43.3 (+1.9)	36.4	41.2	41.9	17	1.07 (-0.83)	14	Trace	8.5
Apl	170 (+18.0)	46.3 (+0.4)	39.3	46.6	44.5	15	2.57 (+0.62)	14	0.83	5.3
May	145 (-49.9)	49.2 (-2.7)	43.2	51.4	48.2	4	2.14 (0.00)	17	0.89	4.8
June	152 (-50.7)	58.3 (+1.0)	51.9	58.1	51.9	0	2.29 (+0.08)	17	0.55	4.9
July	136 (-56.0)	58.9 (-1.7)	52.3	60.4	55.3	0	3.36 (+0.81)	11	1.81	4.6
Aug	112 (-69.7)	59.3 (-0.8)	54.7	59.6	56.3	0	2.96 (+0.37)	18	1.19	6.0
Sept	107 (-38.3)	57.3 (+1.2)	53.3	58.2	56.8	0	5.46 (+3.07)	21	3.45	5.5
Oct	56 (-47.8)	54.1 (+5.0)	51.2	55.1	55.6	1	2.14 (-0.83)	13	1.10	4.5
Nov	29 (-32.1)	42.6 (+0.2)	40.4	46.9	52.1	6	1.92 (-0.87)	18	1.39	5.8
Dec	27 (-18.4)	35.7 (-2.9)	34.1	41.0	47.8	22	3.08 (+0.45)	14	2.84	5.0
Year	1149(-366.1)	48.1 (-0.1)	43.5	49.7	49.7	106	30.53 (+1.99)	189	17.38	5.6

(1) Mean of maximum and minimum
(2) Number of nights grass min. was below 32 °F
(3) Number of days rainfall was 0.01 in. or more
(4) At 2 metres above ground level.

68/E/1.2

METEOROLOGICAL RECORDS 1968 - WOBURN

(Departure from long period means in brackets)

Month	Total sunshine: hours	Mean temperature: °F Air(1)	Dew point	In ground 1 ft.	In ground 4 ft.	Ground(2) frosts	Total rainfall: in. 5 in. gauge	Rain(3) days	Wind(4) m.p.h.
Jan	44.0 (-8.5)	38.5 (+1.2)	34.7	39.5	44.3	17	1.82 (-0.27)	17	6.6
Feb	38.5 (-28.1)	35.3 (-2.8)	31.3	38.0	43.3	25	0.85 (-0.71)	10	4.0
Mar	133.7 (+14.5)	43.9 (+2.0)	37.1	41.5	42.4	17	0.62 (-1.04)	15	7.8
Apl	158.4 (+14.3)	45.9 (-0.8)	39.6	46.5	44.6	16	1.99 (+0.21)	13	4.5
May	147.1 (-38.4)	49.4 (-2.5)	43.9	51.6	48.1	8	2.17 (+0.01)	17	3.9
June	172.9 (-25.3)	58.7 (+0.9)	52.3	59.6	52.5	1	3.05 (+1.09)	15	4.5
July	119.8 (-61.4)	58.6 (-2.3)	52.5	61.8	56.1	0	4.28 (+2.08)	13	3.4
Aug	109.5 (-65.6)	59.6 (-0.9)	54.8	60.7	57.3	0	2.96 (+0.53)	13	4.6
Sept	113.5 (-22.1)	57.3 (+0.7)	52.7	59.0	57.7	0	4.25 (+2.19)	19	5.4
Oct	66.7 (-35.6)	54.8 (+5.0)	51.1	55.5	56.1	0	1.60 (-0.63)	13	5.0
Nov	31.6 (-27.4)	43.3 (0.0)	40.0	47.7	52.9	7	2.08 (-0.40)	15	4.1
Dec	26.3 (-19.6)	36.1 (-3.0)	34.2	40.7	48.4	18	1.85 (-0.26)	12	3.6
Year	1162.0 (-303.2)	48.5 (-0.2)	43.7	50.2	50.3	109	27.52 (+2.80)	172	4.8

(1) Mean of maximum and minimum
(2) Number of nights grass min. was below 32°F
(3) Number of days rainfall was 0.01 in. or more
(4) At 2 metres above ground level

68/E/1.3

METEOROLOGICAL RECORDS 1968 - SAXMUNDHAM

Month	Mean temperature: °F Air(1)	Dew point	In ground on bare surface 1 ft.	Ground(2) frosts	Total rainfall:in. 5 in. gauge	Rain(3) days	Wind(4) m.p.h.
Jan	36.7	32.0	38.6	15	2.50	14	8.14
Feb	35.9	29.3	36.9	18	2.37	12	6.37
Mar	43.5	36.5	41.1	7	1.11	13	9.63
Apl	46.6	37.4	46.9	7	1.05	12	6.70
May	50.0	43.7	52.5	7	1.66	14	5.37
June	57.9	51.8	61.0	0	2.21	18	5.00
July	58.5	53.6	62.3	0	2.52	9+	4.45
Aug	60.3	53.6	61.3	0	2.87	18	5.70
Sept	57.8	51.8	58.7	0	5.44	16	6.23
Oct	54.7	50.0	54.5	0	1.99	12	5.82
Nov	44.0	39.2	46.4	7	1.60	23	6.37
Dec	36.3	30.2	40.6	16	1.76	13	6.17
Year	48.5	42.4	50.1	77	27.08	174+	6.33

(1) Mean of maximum and minimum
(2) Number of nights grass min. was below 32 °F
(3) Number of days rainfall was 0.01 in. or more
(4) At 2 metres above ground level