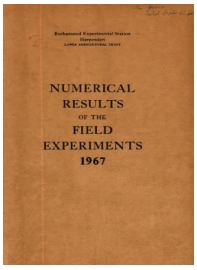
Yields of the Field Experiments 1967

Full Table of Content



Yields of the Field Experiments 1967 - Numerical Results

Rothamsted Research

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NUMERICAL RESULTS OF THE FIELD EXPERIMENTS 1967

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Rothamsted Experimental Station

Harpenden

Lawes Agricultural Trust

NUMERICAL RESULTS

of the

FIELD

EXPERIMENTS

1967

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. McEwan (Deputy Secretary), F.C. Bawden, G.W. Cooke, J.M. Hirst, F.G.W. Jones, J.R. Moffatt, J.A. Nelder).

Price: 10/-

Published 1969

CONTENTS 1967

CLASSICAL EXPERIMENTS*

ROTATION EXPERIMENTS

CROP SEQUENCE EXPERIMENTS*

CROPS IN 1967

CONTENTS 1967 (CONTD.)

CROP SEQUENCE EXPERIMENTS* (continued)

CONTENTS 1967 (CONTD.)

CROP SEQUENCE EXPERIMENTS* (continued)

ANNUAL EXPERIMENTS*

CONTENTS 1967 (CONTD.)

ANNUAL EXPERIMENTS* (continued)

MISCELLANEOUS DATA

* At Rothamsted unless othewise 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.

(3) The variety of spring tick beans grown on several experiments in 1967 (Tarvin) was formerly called Pedigree.

NUMERICAL RESULTS OF THE FIELD EXPERIMENTS, 1967

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

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.

67/A/1.1

WHEAT - BROADBALK 1967

(BK)

The 124th year

For history, treatments etc. see 'Details' 1962.

Cultivations, etc.:

Cropped sections: Section IA, sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Sept 16, 1966. Ground chalk applied: Sept 21. Ploughed: Oct 12. Dung applied and ploughed in: Oct 14. Autumn fertilisers applied: Nov 2. Rotary cultivated, seed drilled at 185 lb: Nov 3. Spring fertilisers applied: Apr 19, 1967. Second dressing of nitrate of soda applied to plot 16: Apr 27. All sections except Va sprayed with ioxynil/mecoprop (Actril C at 6 pints in 20 gals): May 1. Combine harvested: Aug 31. Variety: Squarehead's Master 13/4 (Rothamsted seed from Broadbalk field).

Fallow section II: Ploughed: Oct 12, 1966. Rotary cultivated: Nov 3. Ploughed: Mar 29 and July 5, 1967.

Broadbalk Wilderness: Cultivations, etc.:

Ungrazed meadow (north): Shrubs grubbed out: Oct 22 - Dec 5, 1966.

Grazed meadow (centre): Grazed by sheep: Apr 10 - 18, 1967, May 15 - 24, June 19 - July 3, July 24 - Aug 4, Aug 30 - Sept 11, Oct 3 - Oct 10, Nov 4 - Nov 8. Grass topped: Apr 19, May 24, July 3, Aug 4, Sept 11.

SUMMARY OF RESULTS

GRAIN

Section Years after fallow	IB 1	III 2	IV 3	VA 4	VB 9	IA 16	Mean
2A	29.8	17.2	20.6	17.6	15.1	18.8	19.8
2B	33.6	19.6	21.0	17.8	18.0	16.4	21.3
3	20.7	9.8	7.4	10.3	7.9	7.5	10.4
5	20.4	9.0	9.3	12.1	9.2	7.5	11.0
6	20.8	13.2	7.6	12.2	11.0	14.1	12.4
7	22.4	21.6	16.2	12.2	14.9	20.2	18.2
8	27.4	31.6	26.6	15.8	24.3	26.4	26.5
9	21.3	16.3	13.7	14.7	13.0	13.9	15.5
10	18.0	21.7	17.4	14.7	18.0	7.6	17.7
11	23.7	19.1	15.8	10.1	17.5	19.0	17.6
12	23.9	19.8	14.0	10.5	17.3	20.4	17.4
13	26.2	16.2	11.3	9.1	14.4	16.0	15.2
14	30.1	19.3	11.1	15.4	17.9	21.0	18.1
15	20.2	12.0	3.8	9.0	11.2	9.4	10.3
16	31.7	28.9	21.5	24.0	27.1	20.1	25.9
17	16.4	7.5	4.4	9.4	6.3	4.9	7.8
18	19.2	16.2	15.1	10.5	19.9	13.5	15.9
19	21.9	12.1	7.8	12.1	12.6	13.4	12.5
20	16.8					10.7	14.8

Mean D.M. %: 83.7

NOTE: The yields above are calculated (as in all experiments in the 'Results') from the weight of 'first' grain delivered by the combine harvester, adjusted only for moisture content. On certain sub plots in 1967, samples were separated into wheat, weed seeds and rubbish. Results:-

% WEED SEEDS PLUS RUBBISH

Section	Plot no. 2	5	7	9	18
IA	0.9	1.0	0.3	0.2	0.7
IB	0.5	0.7	0.5	0.2	0.4
VA	3.7	18.2	3.4	5.2	12.3
VB	1.7	2.3	1.8	0.3	2.5

67/A/1.3

STRAW

Section Years after fallow	IB 1	III 2	IV 3	VA 4	VB 9	IA 16	Mean
2A	55.2	29.2	34.5	40.0	41.0	32.5	37.3
2B	60.7	34.9	35.7	42.9	40.5	34.3	40.4
3	24.2	11.1	7.6	12.4	9.7	11.1	12.0
5	29.0	9.8	9.5	16.6	11.4	11.0	13.6
6	32.9	17.3	10.8	25.2	17.1	22.0	19.0
7	38.7	37.1	29.1	37.6	35.0	35.8	34.9
8	44.7	48.5	38.3	40.1	44.1	42.0	43.2
9	34.1	26.8	21.5	31.8	25.1	27.0	26.8
10	19.6	27.9	22.4	23.7	27.4	14.9	23.8
11	31.7	27.9	20.3	21.0	28.8	28.9	25.7
12	33.8	28.4	18.7	22.8	27.9	28.3	25.8
13	45.2	30.3	18.1	28.5	33.4	26.7	29.0
14	42.5	29.0	18.2	23.9	25.5	30.0	27.0
15	31.6	16.8	9.3	23.8	18.1	24.9	18.4
16	49.7	44.4	32.9	42.1	47.8	33.2	41.4
17	22.0	9.3	4.9	18.0	11.3	6.3	11.0
18	33.1	23.8	28.3	31.5	35.4	23.6	28.7
19	31.7	17.1	13.1	27.1	17.7	20.0	19.6
20	21.8					19.2	21.0

Mean D.M. %: 86.5

67/A/2

PERMANENT BARLEY EXPERIMENT HOOSFIELD, FALLOW 1967 (the 116th year)

(HB)

For history, treatments, etc., see 'Details' 1962 and 'Results' 64/A/2.

No mineral fertilisers or nitrogen were applied. Castor meal was applied at 129 lb N (3 times the normal rate) to the x sub-plots only of series C in order to balance the heavier dressings applied to the y sub-plots in 1964, 1965 and 1966. Dung was applied as usual.

Liming: The quinquennnial chalk dressing is to be discontinued. Chalk was therefore applied this year, as follows:-

Plot No.	Ground chalk
1Ax, 2Ax, 3Ax, 4Ax, 5Ax	651 lb
1Ay, 2Ay, 3Ay, 4Ay, 5Ay	1952 lb
1C, 2C, 3C, 4C	813 lb

Corrective liming was also carried out, as follows:-

Plot No.	Ground chalk
1N, 1C, 4C, 4A	23 cwt
7-1, 6-1, 6-2, 5A, 2C	46 cwt

Cultivations, etc.: Sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Sept 16, 1966. Dung applied, all plots ploughed: Oct 19. Rotary cultivated twice: Mar 31, 1967 and May 19 - June 2. Castor meal applied: June 9. Ground chalk applied: June 23. Deep-tine cultivated: July 3. Rotary cultivated: July 26.

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67/A/3

WHEAT AFTER FALLOW - HOOSFIELD 1967

(HWF)

For history, treatments, etc. see 'Details' 1962.

The comparison of two varieties is now discontinued, Cappelle only being sown.

Area of each plot: 0.1238. Area harvested: 0.0368.

Cultivations, etc.:
Cropped plots: Ploughed: Sept 13, 1966. Seed drilled at 180 lb: Oct 28. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 20 gals): May 9, 1967. Combine harvested: Aug 30.
Fallow plots: Ploughed 3 times: Sept 13, 1966, Apr 3 and July 5, 1967.

SUMMARY OF RESULTS

Plot	B1	B2	B3
No of years of fallow	1	1	3
	GRAIN		
	15.9	18.1	22.2
	STRAW		
	11.9	12.1	13.4

Mean D.M. %: Grain: 85.2
Straw: 88.6

GRASS - AGDELL 1967

(AG)

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

Area of each microplot: Plots 1-4 - 0.0180. Plots 5-6 - 0.0162.
Area harvested: Plots 1-4 - 0.0023. Plots 5-6 - 0.0020.

P (as triple superphosphate) was applied in January 1967 to balance withdrawals by grass in 1964 and 1966 to all sub-plots except P0 which continued to receive no P.

K (as muriate of potash) was applied to balance withdrawals by grass in 1964, 1965 and 1966 to all sub-plots except K0 which continued to receive no K. Some of this K was applied in 1966 (see 'Results' 66/A/4). Because the amounts still required were large the 1967 dressings were split to lessen the risk of damaging the grass. Not more than 2.97 cwt K2O (3.32 cwt on sub-plots 5 and 6) - 10 lb muriate of potash per sub-plot - was applied in January and the balance was applied after the first cut but before ploughing.

Rates in cwt P2O5

	Sub-plots testing P				Sub-plots testing K			
Plot no.	P0	P1	P2	P4	K0	K1	K2	K4
1	0	0.75	0.85	0.93	0.80	1.00	0.88	0.91
2	0	0.68	0.75	0.83	0.59	0.86	0.83	0.88
3	0	0.71	0.70	0.89	0.70	0.76	0.84	0.73
4	0	0.57	0.60	0.80	0.73	0.87	0.83	0.86
5	0	0.52	0.60	0.72	0.50	0.72	0.76	0.80
6	0	0.50	0.69	0.76	0.51	0.80	0.70	0.80

Rates in cwt K2O

	Sub-plots testing P				Sub-plots testing K			
Plot no.	P0	P1	P2	P4	K0	K1	K2	K4
1	5.78	6.66	7.07	6.82	0	4.45	4.62	6.00
2	3.80	5.57	5.80	5.67	0	3.68	4.58	6.16
3	3.57	6.02	5.54	6.24	0	4.32	4.78	5.38
4	2.90	4.46	4.43	5.19	0	4.00	4.64	5.72
5	1.54	4.50	4.83	5.24	0	3.29	3.95	5.40
6	0.25	4.62	5.10	5.02	0	3.72	3.59	5.05

Basal dressing: 'Nitro-Chalk' applied at 0.8 cwt N in March.

Cultivations, etc.:-

Grass: P and first dressing of K applied: 18 Jan, 1967. Cut once for silage: 2 June, 1968. Second dressing of K applied: 7 June. Plots ploughed: 14 June. Rotary cultivated: 5 July, 21 July, 8 Aug, 24 Aug. Resown with Timothy: 7 Sept.

Fallow: Ploughed: 31 Oct, 1966.

SUMMARY OF RESULTS

DRY MATTER

P	K	Plot 5	6	3	4	1	2	Mean
		1ST AND ONLY CUT						
0	4	13.7	7.9	30.2	17.0	37.0	27.1	22.1
1	4	50.4	47.8	48.6	47.0	45.2	46.4	47.6
2	4	55.8	45.4	42.4	39.3	39.0	53.6	45.9
4	4	46.9	44.9	48.8	48.2	42.9	40.4	45.3
4	0	41.7	23.9	24.1	37.8	26.2	25.5	29.9
4	1	57.6	44.3	38.4	47.3	41.7	48.1	46.2
4	2	53.0	43.4	36.8	44.7	45.4	49.0	45.4
4	4	53.6	46.2	38.8	37.3	46.6	48.9	45.2
Mean		46.6	38.0	38.5	39.8	40.5	42.4	41.0

Mean D.M. %: 17.9

67/A/5.1

BARNFIELD 1967

(BN)

For history, treatments, etc., see 'Details' 1962 and 'Results' 62/A/5.

Spring beans were grown over the whole experiment. The manures were applied as usual to strips, but castor bean meal, sulphate of ammonia and nitrate of soda were not applied.

Cultivations, etc.: Dung and mineral fertilisers applied: Jan 4, 1967. Ploughed: Feb 8 - 16. Seed drilled at 200 lb: Mar 23. Sprayed with simazine at 1 lb in 32 gals: Mar 23. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 32 gals): June 13. Sides of plots sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 32 gals): July 7. Combine harvested: Sept 8. Variety: Maris Bead.

NOTE: The crop on the strips without dung was stunted and some leaves were blackened, the crop on the dunged strips grew normally. Samples taken in June showed there were no differences in depth of drilling between the strips. It is thought that there was an interaction between simazine and soil organic natter.

67/A/5.2

SUMMARY OF RESULTS

GRAIN

Strip

Series	1	2	4	5	6	7	8	Mean
O	34.2	36.6	11.9	10.0	8.9	10.8	9.7	17.5
N	35.1	36.9	12.7	10.9	9.9	8.9	6.7	17.3
A	32.5	38.2	7.9	8.5	8.3	12.2	2.3	15.7
AC	35.2	39.4	17.3	11.0	14.0	14.0	6.5	19.6
C	32.8	39.6	18.0	11.5	17.6	17.9	6.5	20.5
Mean	34.0	38.1	13.6	10.4	11.7	12.8	6.3	18.1

Plot 9: 11.9

General mean: 18.1

Mean D.M. %: 78.4

HAY - THE PARK GRASS PLOTS 1967

(PG)

For history, treatments etc. see 'Details' 1962 and 'Results' 65/A/6.

Ground chalk was applied to sub-plots as follows (tons $CaCO_3$):-

Plot	Sub-plot b	Sub-plot c
1	-	1.25
4-2	-	2.25
9	-	1.75
10	-	2.00
11-1	2.5	2.00
11-2	1.5	2.00
18-1	-	2.00

Cultivations, etc.: Mineral fertilisers and fish meal applied: Jan 12, 1967. Ground chalk applied: Jan 24. Nitrogenous fertilisers applied: 1st dressing - Apr 5, 2nd dressing - Apr 18. Cut twice: June 12, Oct 18.

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	Mean
1	15.0	7.2	11.2	8.2	10.4	13.3	10.9	2.4	3.2	7.5	28.3	18.1	13.6	11.4	17.9
2	12.0	13.9	9.3	7.4	10.7	14.3	14.3	14.2	14.5	14.3	26.3	28.2	23.6	21.9	25.0
3	13.2	15.2	8.7	10.4	11.9	13.8	15.1	14.7	15.5	14.8	27.0	30.3	23.3	25.9	26.6
4-1	15.8	14.6	19.0	19.3	17.2	14.4	13.8	18.7	19.1	16.5	30.2	28.3	37.7	38.4	33.6
4-2	35.0	35.4	33.3	26.0	32.4	9.8	8.7	5.4	11.8	8.9	44.8	44.1	38.7	37.8	41.4
7	43.5	38.4	25.6	26.0	33.4	22.8	21.8	16.7	15.8	19.3	66.2	60.1	42.3	41.7	52.6
8	19.6	21.3	24.6	21.5	21.8	17.8	15.8	19.1	17.8	17.6	37.4	37.1	43.7	39.3	39.4
9	57.0	50.6	39.1	37.7	46.1	22.4	20.3	8.8	10.3	15.5	79.4	70.9	47.9	48.0	61.6
10	37.9	36.3	27.7	27.2	32.3	10.5	8.5	3.5	7.5	7.5	48.4	44.8	31.2	34.7	39.8
11-1	53.7	55.4	56.0	44.6	52.5	20.3	14.3	8.7	20.5	15.9	74.0	69.7	64.8	65.1	68.4
11-2	54.8	55.9	59.5	44.0	53.6	25.3	29.3	11.0	17.5	20.8	80.2	85.2	70.5	61.5	74.3
12	12.2		11.8		12.0	19.9		17.5		18.7	32.0		29.4		30.7
13	35.7	37.5	43.6	41.3	39.5	35.5	30.5	27.5	23.6	29.3	71.2	68.0	71.0	64.9	68.8
14	44.5	40.8	39.0	38.5	40.7	19.7	22.8	23.6	22.3	22.1	64.3	63.5	62.6	60.8	62.8
15	36.1		20.2		28.1	26.7		15.8		21.3	62.7		36.0		49.4
16	37.9	43.0	36.9	32.3	37.5	22.9	24.6	21.5	21.6	22.7	60.8	67.7	58.4	53.9	60.2
17	15.8	21.4	19.8	15.6	18.2	14.5	11.4	20.1	16.9	15.7	30.3	32.8	39.9	32.5	33.9
18-1			16.8	16.7	16.7			7.7	5.7	6.7			24.5	22.4	23.4
18-2					21.4					15.8					37.2
18-3	23.5	19.1			21.3	11.8	11.1			11.4	35.3	30.2			32.7
19-1					23.2					20.2					43.4
19-2					28.6					19.5					48.1
19-3					25.2					21.7					46.9
20-1					46.4					21.3					67.8
20-2					40.0					22.8					62.9
20-3					34.3					23.7					58.0

Mean D.M. %: 1st cut: 25.0 2nd cut: 25.7 Total of 2 cuts: 25.4

67/A/6.2

https://doi.org/10.23637/ERADOC-1-157

67/A/7

EXHAUSTION LAND, HOOSFIELD FALLOW 1967

(EX)

For history, treatments, etc., see 'Details' 1962 and 'Results' 64/A/7.

Cultivations, etc.: Sprayed with dalapon at 11 lb a.e. in 40 gals: Sept 16, 1966. Ploughed: Sept 18. Rotary cultivated three times: Mar 30, 1967, May 2, June 2. Deep-tine cultivated: June 30. Rotary cultivated: July 12.

67/A/8.1

CLOVER - ROTHAMSTED GARDEN

(EGC)

Revised 1967, the 114th year

For history etc., see 'Details' 1962.

Basal applications: 1 ton ground chalk in 2 equal dressings, 1.2 cwt K_2O as muriate of potash.

Corrective potash: 4.2 cwt K_2O as muriate of potash applied in 2 dressings to the half plot which has not previously received K.

Test of nitrogen: The plot was divided at right angles to the earlier 0 v K split for a test of 0 (N0) v 1.0 (N1) cwt N as 'Nitro-Chalk' in the seedbed and after each cut except the last.

Variety: S123.

Cultivations, etc.: Ground chalk applied at 10 cwt, 5/7 of corrective potash applied, plots dug by hand, ground chalk applied at 10 cwt, 2/7 of corrective potash applied: Mar 7, 1967. Seed sown at 35 lb, basal potash and 'Nitro-Chalk' applied: Apr 4. Irrigated 0.5 ins by hand: June 14. Cut three times: July 20, Aug 24, Oct 24. 'Nitro-Chalk' applied after first two cuts.

67/A/8.2

SUMMARY OF RESULTS

DRY MATTER

NO	N1	Mean
	1ST CUT	
11.8	12.5	12.2
	2ND CUT	
16.5	19.5	18.0
	3RD CUT	
9.4	10.2	9.8
	TOTAL OF 3 CUTS	
37.7	42.2	40.0

Mean D.M. %: 1st cut: 22.7
2nd cut: 13.7
3rd cut: 17.9
Total of 3 cuts: 18.1

SAXMUNDHAM

ROTATION I 1967

(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.

The plots receiving FYM (excluding beans) received also 'Nitro-Chalk' at 0.5 cwt N (N1).

As large losses of nitrate were measured in the drainage water in early May, a test of extra N was made on the discard areas of the barley plots. There was a marked response, and the barley was therefore top-dressed on June 15 with 'Nitro-Chalk' at 0.25 and 0.5 cwt N to the N1 and N2 plots respectively. Sugar beet plots received similar extra dressings on July 18.

Cultivations, etc.:

Sugar beet: FYM applied: Sept 7, 1966. Ploughed: Sept 8. P,K, bonemeal and 'Nitro-Chalk' applied: Mar 8, 1967. Seed drilled: Mar 30, 1967. Singled: May 15 - 30. Sprayed with demeton-s-methyl: June 12 and July 7. Additional 'Nitro-Chalk' applied: July 18. Lifted: Sept 28. Variety: Klein E.

Barley: FYM applied: Oct 27, 1966. Ploughed: Oct - Dec, P,K and bonemeal applied: Mar 8, 1967. 'Nitro-Chalk' applied, seed drilled: Mar 22. Sprayed with mecoprop/2,4-D (Methoxone Extra): May 26. Additional 'Nitro-Chalk' applied: June 15. Combine harvested: Aug 17. Variety: Proctor.

Spring beans: FYM applied: Nov 4, 1966. Ploughed: Nov - Dec. P,K and bonemeal applied: Oct 13. Seed drilled at 260 lb: Mar 13, 1967. Sprayed with simazine at 1 lb in 32 gals: Mar 25. Sprayed with demeton-s-methyl at 3 oz in 37 gals: June 12. Combine harvested: Aug 24. Variety: Spring Tick.

Winter wheat: FYM applied: Sept 7. Ploughed: Sept 8. P,K and bonemeal applied: Oct 13. Seed drilled: Oct 14. 'Nitro-Chalk' applied: Mar 15, 1967. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 20 gals): Apr 27. Combine harvested: Aug 17. Variety: Cappelle.

67/A/9.2

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	19.18	17.4	66.6	5.96	24.0	14.4	23.2	45.3	47.2
B	B	5.24	16.9	17.7	2.13	11.8	6.8	17.5	14.0	13.7
N	N2P2	15.78	16.8	53.0	6.12	25.0	14.3	18.8	34.3	33.6
P	N1P1	10.80	17.0	36.8	4.03	16.5	6.6	18.6	27.7	27.1
K	N1P2K	11.95	18.4	43.9	3.73	16.2	6.0	17.0	25.9	21.7
-	N1P2	10.74	17.3	37.1	3.86	15.0	6.7	18.8	21.0	20.6
PK	N1P1K	11.75	17.5	41.2	3.93	20.8	11.0	22.8	29.2	20.7
NK	N2P2K	17.29	17.3	59.9	6.22	26.4	14.6	22.9	38.8	32.9
NP	N2P1	17.74	16.7	59.3	7.60	24.8	14.2	16.3	36.8	36.8
NPK	N2P1K	16.27	17.6	57.2	6.51	24.9	12.5	21.7	35.3	33.3
Mean		13.67	17.3	47.3	5.01	20.5	10.7	19.7	30.8	28.8
Mean D.M. %:						78.0	76.5	80.3	80.1	80.0

https://doi.org/10.23637/ERADOC-1-157

67/A/9.3

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	12.36	17.3	42.7	3.60	16.6	14.1	17.2	35.1	54.3
2	B	5.76	17.7	20.4	2.64	14.2	12.6	21.0	15.9	23.8
3	N	9.12	18.5	33.7	2.52	12.7	11.5	11.5	19.5	34.8
4	P	5.76	17.1	19.7	2.40	11.7	11.0	16.4	15.8	27.0
5	K	4.20	18.3	15.4	1.92	7.7	7.6	8.2	12.9	24.3
6	-	4.68	17.5	16.4	2.04	6.3	6.6	8.0	9.1	19.1
7	PK	6.96	18.1	25.3	2.76	8.1	7.5	15.6	15.3	26.9
8	NK	9.60	18.5	35.4	4.32	12.6	10.9	12.0	22.2	39.1
9	NP	9.36	18.1	33.9	3.36	15.8	14.3	19.2	29.1	44.7
10	NPK	8.52	18.4	31.4	4.32	17.5	15.3	19.3	32.4	54.9
Mean		7.63	17.9	27.4	2.99	12.3	11.2	14.8	20.7	34.9
Mean D.M. %:						69.0	57.9	78.4	77.5	65.9

67/A/10.1

SAXMUNDHAM

ROTATION II 1967

(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.

Four strips, alternately of sugar beet and white turnips, were cross-drilled on each of the two blocks of the experiment. The plots were manured as in 1966.

Basal manuring: 1.2 cwt N, 2.0 cwt K_2O as 'Nitro-Chalk' and muriate of potash.

Area of each sub-plot: 0.0136. Area harvested: Sugar beet and turnips - 0.0045.

Cultivations, etc.: FYM applied: Sept 27, 1966. First half dressings of triple superphosphate applied: Sept 21. Ploughed: Sept 29 - Oct 27. Second half dressing of triple superphosphate and basal NK applied: Mar 8, 1967. Seed drilled (both crops): Mar 30.
Sugar beet: Dusted against flea-beetle: May 13. Singled: May 15 - 30. Sprayed with demeton-s-methyl: June 12 and July 7. Lifted: Sept 28. Variety: Klein E.
Turnips: Singled: May 1 - 10. Harvested: July 11. Variety: Green.

67/A/10.2

SUMMARY OF RESULTS

Plot	Treatment 1966 and 67	Sugar beet Roots (washed)	Sugar %	Total sugar	Tops	Turnips Roots
1	PO	8.30	15.7	26.2	5.32	2.22
2	PO	13.50	17.6	47.5	4.73	5.00
3	PO	16.88	17.6	59.4	4.95	6.84
4	D	19.55	17.2	67.2	6.48	7.71
5	DP1	19.51	17.3	67.3	6.56	8.13
6	P1	18.35	17.3	63.4	6.51	7.92
7	P2	18.61	17.3	64.4	5.83	7.88
8	PO	17.44	17.3	60.1	5.90	7.25
Mean		16.52	17.2	56.9	5.79	6.62

67/B/1.1

LEY AND ARABLE ROTATIONS

(HLA and FLA)

Highfield and Fosters Field 1967, the 19th year.

For details of treatments, rotations etc., see 'Details' and 'Results' 63/B/1.1, 64/B/1.1, 65/B/1.1, 66/B/1.1.

The variety of oats is now Manod.

Erratum to 'Results' 66/B/1.5. Fosters. '3rd year Treatment Crops:- Oats:' - Seed combine drilled at 160 lb: Mar 7. 'Nitro-Chalk' applied: Mar 9.

HIGHFIELD

1st year Treatment Crops:

All-grass ley: Ploughed: Sept 12, 1966. Basal PK compound applied: Mar 28, 1967. 'Nitro-Chalk' applied, seeds sown at 33 lb: Mar 31. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 31. Cut three times: July 4, Aug 16, Nov 8. NK compound applied after first two cuts.

Clover-grass ley: Ploughed: Sept 12, 1966. Basal PK compound applied: Mar 28, 1967. Seeds sown at 34 lb: Mar 31. Sprayed with 2,4-DB/MCPA (Embutox Plus at 5 pints in 20 gals): May 31. Topped twice: June 20, July 3. Cut three times: July 18, Aug 16, Nov 8. Muriate of potash applied after first two cuts.

Lucerne: Ploughed: Sept 12, 1966. Basal PK compound applied: Mar 28, 1967. Seed drilled at 25 lb: Mar 30. Cut three times: July 14, Aug 29, Nov 13.

Hay (H and RH): Ploughed: Sept 12, 1966. Basal PK compound applied, seeds sown at 40 lb: Sept 13. 'Nitro-Chalk' applied: Mar 28, 1967. Cut twice: June 1, July 17. NK compound applied after first cut.

2nd year Treatment Crops:

All-grass ley: Basal PK compound applied: Jan 13, 1967. NK compound applied: Apr 3. Cut four times: May 26, July 4, Aug 16, Nov 8. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: Jan 13, 1967. Muriate of potash applied: Apr 3. Cut four times: May 26, July 4, Aug 16, Nov 8. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: Jan 13, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: Feb 6. Cut four times: June 2, July 14, Aug 29, Nov 13.

Sugar beet: Ploughed: July 11 - 22, 1966. Ploughed second time:

Sept 12. Muriate of potash applied: Jan 30, 1967. Basal NPK compound and 'Nitro-Chalk' applied, seed drilled at 10 lb: Mar 22. Singled: May 17. Sprayed with demeton-s-methyl at 3 oz in 37 gals: June 7, and at 2.5 oz in 20 gals by hand: July 12. Lifted: Oct 13.

3rd year Treatment Crops:

All-grass ley: Basal PK compound applied: Jan 13, 1967. NK compound applied: Apr 3. Cut four times: May 26, July 4, Aug 16, Nov 8. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: Jan 13, 1967. Muriate of potash applied: Apr 3. Cut four times: May 26, July 4, Aug 16, Nov 8. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: Jan 13, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: Feb 6. Cut four times: June 2, July 14, Aug 29, Nov 13.

Oats: Ploughed: Dec 21, 1966. Seed combine drilled at 160 lb: Mar 8, 1967. 'Nitro-Chalk' applied: Mar 13. Sprayed wih ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 12. Combine harvested: Aug 17.

1st Test Crop, Wheat:-

Half of basal PK compound applied, plots ploughed: Sept 14, 1966. Remainder of basal PK compound applied, seed drilled at 165 lb: Oct 27. 'Nitro-Chalk' applied: Apr 17, 1967. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 32 gals): Apr 26. Combine harvested: Aug 30.

2nd Test Crop, Potatoes:-

Dung applied, plots ploughed: Oct 17, 1966. NPK fertilisers applied: Mar 22 - Apr 4, 1967. Rotary cultivated, potatoes machine planted: Apr 5. Sprayed with linuron at 1 lb and paraquat at 0.75 lb ion in 37 gals: May 9. Sprayed four times with mancozeb at 1.2 lb in 30 gals: June 29, July 20, Aug 4, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 7. 15 ft length at South end of plots 99, 101, 103, 107, (all a and b) hand dug and potatoes discarded because of an attack of Blackleg (Rhizoctonia solani): Sept 12. Lifted: Sept 13.

3rd Test Crop, Barley:-

Ground chalk applied: Oct 31, 1966. Ploughed: Nov 10. Seed combine drilled at 140 lb: Mar 2, 1967. 'Nitro-Chalk' applied: Mar 13. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals): May 12. Combine harvested: Aug 18.

Permanent grasses: 17th, 18th and 19th experimental years permanent (old) grass, all blocks, 17th, 18th and 19th years reseeded grass, blocks 1, 4, 6, 7, 9 and 12. Ground chalk applied to blocks 5 and 8: Oct 31, 1966. Basal PK compound applied: Jan 13, 1967. NK compound

applied to 'all grass' half plots, muriate of potash to 'clover-grass' half plots: Apr 3. Cut four times: May 31, July 4, Aug 16, Sept 26. NK compound and muriate of potash applied to appropriate half plots after each cut except the last.

FOSTERS

1st year Treatment Crops:

All-grass ley: Ploughed: Sept 5, 1966. Basal PK compound applied: Mar 28, 1967. 'Nitro-Chalk' applied, seeds sown at 33 lb: Mar 31. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 31. Cut three times: July 4, Aug 16, Nov 8. NK compound applied after first two cuts.

Clover-grass ley: Ploughed: Sept 5, 1966. Basal PK compound applied: Mar 28, 1967. Seed sown at 34 lb: Mar 31. Sprayed with 2,4-DB/MCPA (Embutox Plus at 5 pints in 20 gals): May 31. Topped twice: June 20, July 3. Cut three times: July 18, Aug 16, Nov 8. Muriate of potash applied after first two cuts.

Lucerne: Ploughed: Sept 5, 1966. Basal PK compound applied: Mar 28, 1967. Seed sown at 25 lb: Mar 30. Cut three times: July 14, Aug 29, Nov 13.

Hay (H and RH): Ploughed: Sept 5, 1966. Basal PK compound applied, seed sown at 40 lb: Sept 13. 'Nitro-Chalk' applied: Mar 28, 1967. Cut twice: June 1, July 17. NK compound applied after first cut.

2nd year Treatment Crops:

All-grass ley: Basal PK compound applied: Jan 13, 1967. NK compound applied: Apr 3. Cut four times: May 23, July 4, Aug 15, Nov 8. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: Jan 13, 1967. Muriate of potash applied: Apr 3. Cut four times: May 26, July 4, Aug 15, Nov 8. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: Jan 13, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: Feb 6. Cut four times: June 2, July 14, Aug 29, Nov 13.

Sugar beet: Ploughed: July 11 - 22, 1966. Ploughed second time: Sept 12. Muriate of potash applied: Jan 30, 1967. Basal NPK compound applied, seed drilled at 10 lb: Mar 22. Singled: May 18. Sprayed with demeton-s-methyl at 3 oz in 37 gals: June 7, and at 2.5 oz in 20 gals by hand: July 12. Lifted: Oct 13.

3rd year Treatment Crops:

All-grass ley: Basal PK compound applied: Jan 13, 1967. NK compound applied: Apr 3. Cut four times: May 23, July 4, Aug 15, Nov 8. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: Jan 13, 1967. Muriate of potash applied: Apr 3. Cut four times: May 23, July 4, Aug 16, Nov 8. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: Jan 13, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: Feb 6. Cut four times: June 2, July 14, Aug 29, Nov 13.

Oats: Ploughed: Dec 21, 1966. Seed combine drilled at 160 lb: Mar 8, 1967. 'Nitro-Chalk' applied: Mar 13. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 12. Combine harvested: Aug 17.

1st Test Crop, Wheat:-

Basal PK compound applied, plots ploughed: Sept 14, 1966. Basal PK compound applied, seed drilled at 165 lb: Oct 26. 'Nitro-Chalk' applied: Apr 17, 1967. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 32 gals): Apr 26. Combine harvested: Aug 30.

2nd Test Crop, Potatoes:-

Dung applied, plots ploughed: Oct 14, 1966. NPK fertiliser applied: Mar 22 - Apr 4, 1967. Rotary cultivated, potatoes machine planted: Apr 5. Sprayed with linuron at 1 lb and paraquat 0.75 lb in 37 gals: May 9. Sprayed four times with mancozeb at 1.2 lb in 30 gals: June 29, July 20, Aug 4, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 7. Lifted: Sept 13.

3rd Test Crop, Barley:-

Ploughed: Nov 9, 1966. Seed combine drilled at 140 lb: Mar 2, 1967. 'Nitro-Chalk' applied: Mar 13. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals): May 12. Combine harvested: Aug 18.

Permanent grasses:-

17th, 18th and 19th years reseeded grass, blocks 1, 3, 6, 8, 9 and 11. Basal PK compound applied: Jan 13, 1967. NK compound applied to 'all-grass' half plots and muriate of potash to 'clover-grass' half plots: Apr 3, 1967. Cut four times: May 31, July 4, Aug 15, Sept 27. NK compound and muriate of potash applied to appropriate half plots after first three cuts.

Standard errors per plot. Test crops:

Potatoes. Total tubers:

Highfield: Sub plot: 0.475 or 2.0% (12 d.f.)
Fosters: Sub plot: 1.041 or 4.8% (12 d.f.)

67/B/1.5

SUMMARY OF RESULTS

WHEAT 1ST TEST CROP

1964 - 1966

	Lu	LC	LN	AH	Mean
GRAIN					
HIGHFIELD					
Mean	51.7	56.9	51.1	54.3	53.5
To test crop					
N0	53.1	62.1	54.5	48.9	
N1	51.0	60.4	52.9	60.2	
N2	55.1	53.5	53.2	54.5	
N3	47.5	51.6	44.0	53.8	
T0	51.3	55.8	53.2	53.8	53.5
T1	52.1	58.0	49.1	54.9	53.5
FOSTERS					
Mean	63.8	61.5	62.7	60.5	62.1
To test crop					
N0	66.4	61.6	60.2	50.4	
N1	66.6	65.6	66.6	66.1	
N2	63.8	60.3	65.5	65.2	
N3	58.6	58.6	58.6	60.3	
T0	64.9	59.7	62.4	58.4	61.3
T1	62.8	63.4	63.0	62.6	62.9

Mean D.M. %: Highfield: 83.4
Fosters: 84.0

67/B/1.6

WHEAT 1ST TEST CROP

1964 - 1966

	Lu	LC	LN	AH	Mean
			STRAW		
			HIGHFIELD		
Mean	64.4	61.7	55.0	56.0	59.3
To test crop					
N0	53.6	56.5	49.6	45.6	
N1	64.9	61.4	56.6	57.0	
N2	67.9	63.5	56.9	58.1	
N3	71.2	65.2	56.9	63.1	
T0	62.3	58.8	55.0	52.2	57.1
T1	66.5	64.6	55.0	59.7	61.5
			FOSTERS		
Mean	62.8	62.9	60.5	55.2	60.4
To test crop					
N0	55.3	54.8	48.6	39.3	
N1	64.4	64.6	64.4	58.1	
N2	66.0	66.0	63.8	62.6	
N3	65.4	66.1	65.4	60.8	
T0	63.5	59.9	58.3	52.9	58.6
T1	62.1	65.9	62.7	57.5	62.1

Mean D.M. %: Highfield: 85.7
Fosters: 88.5

67/B/1.7

POTATOES 2ND TEST CROP. TOTAL TUBERS

1963 - 1965

	Lu	LC	LN	AH	Mean
		HIGHFIELD			
Mean	23.54	24.28	23.32	22.90	([redacted]) 23.51
		(±0.237)*			(±0.119)
F	23.41	24.82	23.36	23.28	23.72
D	23.68	23.75	23.28	22.52	23.31
To wheat 1966					
		(±0.237)*			(±0.119)
N02	23.57	24.86	23.44	23.12	23.75
N13	23.52	23.71	23.20	22.69	23.28
		FOSTERS			
Mean	21.58	22.00	21.28	21.14	([redacted]) 21.50
		(±0.520)*			(±0.260)
F	21.87	22.33	21.28	21.63	21.78
D	21.30	21.67	21.28	20.65	21.22
To wheat 1966					
		(±0.520)*			(±0.260)
N02	21.60	21.55	21.40	21.22	21.44
N13	21.57	22.45	21.16	21.06	21.56

* For use in vertical and interaction comparisons

67/B/1.8

POTATOES 2ND TEST CROP. % WARE

1963 - 1965

	Lu	LC	LN	AH	Mean
		HIGHFIELD			
Mean	96.4	95.8	96.5	96.7	96.3
F	96.2	95.5	96.8	96.9	96.3
D	96.5	96.1	96.1	96.6	96.3
To wheat 1966					
N02	96.2	96.2	96.4	96.8	96.4
N13	96.6	95.4	96.5	96.7	96.3
		FOSTERS			
Mean	96.1	96.8	96.6	96.2	96.4
F	96.2	96.7	96.8	96.2	96.5
D	96.0	96.8	96.5	96.2	96.4
To wheat 1966					
N02	96.2	96.4	96.7	96.5	96.5
N13	95.9	97.1	96.6	95.9	96.4

BARLEY 3RD TEST CROP

GRAIN

1962 - 1964

	Lu	LC	LN	AH	R	Mean
			HIGHFIELD			
Mean	42.5	43.4	42.0	40.7	50.0	43.7
1967						
N0	36.4	41.5	39.2	33.4	51.6	40.4
N1	43.5	43.9	37.3	40.0	54.8	43.9
N2	42.8	42.5	44.6	42.9	45.8	43.7
N3	47.4	45.6	47.0	46.6	47.8	46.9
1966						
F	40.7	42.5	41.6	40.3	50.3	43.1
D	44.4	44.2	42.4	41.2	49.7	44.4

Excluding AH

1967

1966	N0	N1	N2	N3	Mean
F	40.9	43.8	43.6	47.0	43.8
D	43.4	46.0	44.4	46.9	45.2

Mean D.M. %: 79.6

67/B/1.10

BARLEY 3RD TEST CROP

GRAIN

1962 - 1964

	Lu	LC	LN	AH	R	Mean
			FOSTERS			
Mean	51.8	50.8	50.9	50.4	54.0	51.6
1967						
N0	47.9	49.0	45.8	41.4	53.8	47.6
N1	51.5	52.0	52.9	-	55.6	-
N2	54.6	52.3	53.3	49.8	54.1	52.8
N3	53.1	50.0	51.6	56.5	52.3	52.7
N4	-	-	-	54.1	-	-
1966						
F	50.7	50.0	49.5	49.2	52.2	50.3
D	52.9	51.7	52.3	51.7	55.7	52.9

Excluding AH

1967

1966	N0	N1	N2	N3	Mean
F	48.2	51.6	52.2	50.2	50.6
D	50.0	54.4	54.9	53.2	53.2

Mean D.M. %: 78.9

67/B/1.11

TREATMENT CROPS ARABLE AND HAY ROTATION

HAY: DRY MATTER (Total of 2 cuts)

After arable crops			After reseeded grass ploughed 1963 - 1964		
F	D	Mean	F	D	Mean
HIGHFIELD					
103.9	100.2	102.0	104.6	105.2	104.9
FOSTERS					
88.5	92.1	90.3	96.6	100.2	98.4

67/B/1.12

TREATMENT CROPS ARABLE AND HAY ROTATION

HIGHFIELD Mean		FOSTERS Mean
	SUGAR BEET	
	ROOTS	
22.27		21.14
	SUGAR %	
16.1		16.4
	TOTAL SUGAR	
71.5		69.3
	TOPS	
19.87		17.57
	OATS	
	GRAIN	
41.4		41.0

Oats, grain, mean D.M. %: Highfield 80.6
Fosters 81.5

LUCERNE: DRY MATTER

	HIGHFIELD 1965			FOSTERS 1965		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	57.5	57.2	57.3	53.6	57.2	55.4
2nd year (4 cuts)			76.8			93.4
3rd year (4 cuts)			47.3			60.8

ALL-GRASS LEY: DRY MATTER

	HIGHFIELD 1965			FOSTERS 1965		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	70.5	73.5	72.0	59.6	60.1	59.9
2nd year (4 cuts)			100.6			95.8
3rd year (4 cuts)			85.3			84.1

CLOVER-GRASS LEY: DRY MATTER

	HIGHFIELD 1965			FOSTERS 1965		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	43.0	44.7	43.9	32.8	36.9	34.8
2nd year (4 cuts)			63.6			64.6
3rd year (4 cuts)			58.9			63.1

PERMANENT GRASS: DRY MATTER

	N0	N1	Mean
	HIGHFIELD		
17th exptl year			
Blocks 9 and 12	38.4	95.6	67.0
Blocks 10 and 11	36.8	95.8	66.2
18th exptl year			
Blocks 5 and 8	49.4	96.0	72.8
Blocks 6 and 7	39.3	103.0	71.2
19th exptl year			
Blocks 1 and 4	46.0	97.4	71.7
Blocks 2 and 3	58.4	93.4	75.9

(N0) Clover-grass management
(N1) All-grass management

67/B/1.15

RESEEDED GRASS: DRY MATTER

	HIGHFIELD			FOSTERS		
	N0	N1	Mean	N0	N1	Mean
17th exptl year	50.4	92.8	71.6	55.8	90.7	73.2
18th exptl year	49.6	94.4	72.0	55.2	87.6	71.4
19th exptl year	46.8	98.9	72.8	53.8	87.8	70.8

(N0) Clover-grass management
(N1) All-grass management

67/B/2.1

REFERENCE PLOTS

ROTHAMSTED (R) GREAT FIELD IV AND HIGHFIELD IX

AND

WOBURN (W) STACKYARD SERIES C, 1967

(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 and 66/B/2. For conifer seedbeds and transplants see 63/B/2, 64/B/2, 65/B/2 and 66/B/2.

Woburn:

Each plot of the oats was split for a test Ov 3.6 lb Mn as manganese sulphate applied in April, and a test of Ov 45 lb Mg as magnesium sulphate. Each test was made to pairs of quarter plots.

Cultivations, etc.:-

Great Field IV (R):-

Winter wheat: Dug by hand: Sept 23, 1966. P,K,Mg,Ca and S applied: Oct 21, 1966. Seed drilled: Oct 24. First N dressing applied (excluding additional plots): Mar 3, 1967. Second N dressing applied, all N applied to additional plots, trace element spray applied: Apr 17. Harvested: Aug 17.

Kale: FYM applied, plots dug by hand: Nov 11, 1966. P,K,Mg,Ca and S applied: Feb 9 - Mar 3, 1967. First N dressings applied to additional plots, all plots rotary cultivated, seed sown: Mar 22. N fertiliser applied (excluding additional plots): Apr 17. Second N dressings applied to additional plots: May 26. Trace element spray applied: June 14. Harvested: Oct 23.

Barley: Dug by hand: Nov 16, 1966. P,K,Mg,Ca and S applied: Feb 9 - Mar 3, 1967. N applied, plots rotary cultivated, seed drilled: Mar 7, additional plots: Mar 14. Trace element spray applied: May 31. Harvested: Aug 10.

Grass-clover ley: Undersown in barley: Apr 12, 1966. P,K,Mg,Ca and S applied: Feb 9 - Mar 3, 1967. All N applied: Mar 3. Trace element spray applied: Apr 17. Cut four times: Oct 31, 1966, May 22, 1967, July 16, Sept 27.

Potatoes: FYM applied, plots dug by hand: Nov 15, 1966. P,K,Mg,Ca and S applied: Feb 9 - Mar 3, 1967. First N dressings applied to additional plots, all N applied to

remaining plots, plots rotary cultivated twice, potatoes planted: Mar 31. Second N dressing applied to additional plots: May 26. Trace element spray applied: June 14. Sprayed with dimethoate at 5 oz in 50 gals and with fentin acetate at 2.4 oz and maneb at 0.8 oz in 50 gals: June 27. Sprayed with dimethoate at 5 oz in 50 gals: July 21. Sprayed with fentin acetate at 2.4 oz and maneb at 0.8 oz in 50 gals: Aug 3. Lifted: Plots with neither K nor FYM (where haulm died early): Aug 3, remainder: Sept 8.

Permanent grass: FYM, P and K applied: Feb 9, 1967. N applied first dressing: Mar 3, second: May 18, third: July 16. Cut three times: May 18, July 16, Oct 6.

NOTES: (1) Yields of dry matter were obtained from each crop.
(2) The percentages of N, P and K were measured in each crop.

ADDENDUM to 'Results' 66/B/2.2:- Under the heading 'Great Field IV (R): Potatoes', insert 'Second N dressing applied: May 31'.

Stackyard Series C (W):-

Winter oats: Plots dug by hand: Sept 26, 1966. P and K applied, seed drilled: Oct 24. Ground chalk applied at 26 cwt: Jan 13, 1967. First N dressing applied: Mar 16. Second N dressing applied: Apr 19. Manganese sulphate applied: Apr 21. Magnesium sulphate applied: May 2. Harvested: Aug 7.

Sugar beet: FYM applied: Dec 5, 1966. Plots dug by hand: Dec 9. Ground chalk applied at 26 cwt: Jan 13, 1967. P and K applied: Feb 15. First N dressing applied, plots rotary cultivated, seed drilled: Mar 28. First dressing of Mg fertiliser applied to half plots: Apr 3. Sprayed five times with dimethoate at 4.8 fl oz in 50 gals: May 24, June 9, June 23, July 10, July 25. Second N dressing applied: May 25. Singled: June 8. Second dressing of Mg fertiliser applied to same half plots: June 27. Harvested, Mg applied to other half plots: Oct 5.

Barley: Plots dug by hand: Dec 5, 1966. Ground chalk applied at 26 cwt: Jan 13, 1967. P and K applied: Feb 15. First N dressing applied, rotary cultivated, seed drilled: Mar 16. Second N dressing applied: May 2. Harvested: Aug 11.

Grass-clover ley: Undersown in barley: Mar 8, 1966. Ground chalk applied at 26 cwt: Jan 3, 1967. P and K applied: Feb 15. All N applied: Mar 16. Cut four times: Oct 17, 1966, May 25, 1967, July 18, Sept 28.

Potatoes: FYM applied: Dec 5, 1966. Plots dug by hand: Dec 9. Ground chalk applied at 26 cwt: Jan 13, 1967. P and K applied: Feb 15. First N dressing applied, plots rotary cultivated, setts planted: Apr 3. Second N dressing applied: May 25. Sprayed with dimethoate at 4.8 fl oz in 50 gals: June 9. Sprayed twice with fentin acetate at 2.4 oz plus maneb at 0.8 oz in 50 gals: June 29, Aug 4. Lifted: Sept 7.

Permanent grass: FYM, P and K applied: Feb 15, 1967. First N dressing applied: Mar 16. Second N dressing applied: May 25. Third N dressing applied: July 18. Cut three times: May 25, July 18, Oct 5.

NOTES: (1) Samples were taken for determination of dry matter for each crop, and the percentage N, P and K.
(2) The percentage of Mg in the leaves of sugar beet was determined.
(3) Surface soil samples were taken from each block for a determination of soil pH on Nov 3, 1966.

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

Cultivations, etc.: P and K fertilisers applied, ground chalk applied to appropriate plots: Dec 14, 1966. First N dressings applied: Mar 3, 1967. Sample cuts taken four times: May 3, June 20, Aug 30, Nov 2. All plots topped: June 20. 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.
(3) The pH and available P and K content of the soil were measured.

Conifer seedbeds and transplants:

Bed 1: Formalin (250 ml. in 4 l. water) applied: Dec 15, 1966. All manures (other than N) dug in: Mar 8, 1967. Seed sown: Mar 17 - 20. T.V.O. pre-emergence spray: Apr 14. N top-dressed: June 15, July 13, Aug 18, Sept 7.

Bed 2: Seedbeds as for Bed 1. Transplants plots lined out: Mar 20. All manures (other than N) as for seedbeds. N topdressed on transplants: May 2, June 1, July 13, Aug 10.

NOTES: (1) Height assessments and samples for analyses as in 1966.
(2) Plots lacking N, P, K and Mg had typical deficiency symptoms.

Standard errors per plot.

Highfield IX (R), Dry matter:

1st cut:	3.87 or 21.0% (39 d.f.)
2nd cut:	5.58 or 11.3% (39 d.f.)
3rd cut:	4.18 or 11.4% (39 d.f.)
4th cut:	5.89 or 23.2% (39 d.f.)
Total of 4 cuts:	9.84 or 7.6% (39 d.f.)

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

Mean height:	0.160 or 7.7% (11 d.f.)
Plant number:	139.7 or 14.7% (11 d.f.)

67/B/2.5

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	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: Total of 3 cuts
None	34.9	40.5	10.24	31.2	26.8	2.9	19.1	23.8	21.0	66.8	1.82	8.9	13.3	14.9	37.1
N1	41.4	49.9	10.42	37.5	32.6	1.4	23.9	18.9	17.0	61.2	2.38	15.5	13.0	19.6	48.1
P	45.5	58.2	12.50	40.8	34.9	2.8	13.9	14.1	5.5	36.3	2.32	8.1	10.8	14.4	33.3
N1P	31.5	46.9	20.66	38.7	34.5	2.4	24.0	14.1	5.6	46.1	1.34	20.5	13.9	20.5	54.9
K	45.8	57.5	7.12	29.3	24.4	5.3	23.3	36.9	16.6	82.1	10.24	10.9	11.8	14.7	37.4
N1K	54.8	72.8	7.12	38.2	33.5	2.4	28.1	32.5	21.7	84.7	9.03	25.7	19.0	24.4	69.1
PK	45.4	60.0	17.36	37.4	32.0	9.4	31.3	43.8	21.2	105.7	13.80	12.1	17.6	18.5	48.2
N1PK	57.9	83.3	21.36	44.6	40.6	3.2	40.0	35.2	27.3	105.7	13.28	22.2	20.7	21.9	64.8
N2PK	53.3	87.8	24.83	49.8	45.2	3.5	52.6	37.4	34.7	128.2	12.68	40.1	23.2	30.3	93.6
D	58.1	72.2	17.71	42.4	39.3	3.7	37.2	36.2	32.4	109.5	13.72	38.4	16.3	17.8	72.5
N1PKD	55.9	91.6	29.17	53.1	50.1	6.1	41.8	39.8	31.5	119.2	19.44	45.7	22.4	23.9	92.0
N2PKD	50.1	95.9	33.16	58.7	56.2	2.0	47.9	32.8	30.0	112.7	22.57	50.8	23.7	33.3	107.8
Mean D.M. %:	78.1	73.4		77.7	48.4	20.0	21.4	28.1	23.6	23.3		21.3	30.9	22.8	25.0

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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	Ley: DRY MATTER 2nd cut	Ley: DRY MATTER 3rd cut	Ley: DRY MATTER 4th cut	Total Potatoes: of 4 cuts	Total Potatoes: TOTAL TUBERS
None	33.4	40.6	14.58	32.2	26.4	4.8	29.0	33.3	31.2	98.3	2.68
N2 PK	63.4	88.6	24.83	57.9	60.4	7.0	51.9	43.3	32.9	135.1	14.32
N2 PK Mg Ca	56.7	83.9	32.82	53.2	50.8	7.2	52.4	43.1	30.5	133.2	13.80
N2 PK Mg S	59.1	83.4	31.78	58.1	52.1	9.6	53.4	45.1	32.0	140.1	14.58
N2 PK Ca S	51.8	63.6	29.00	62.2	66.7	7.8	55.5	46.6	37.3	147.2	14.32
N2 PK Mg Ca S	57.5	80.6	30.90	56.7	54.9	5.7	51.5	41.9	30.3	129.4	15.62
N2 PK Mg Ca S TE	61.2	82.6	27.26	55.2	58.8	5.5	47.5	40.1	37.7	130.8	13.37
Mean D.M. %	78.1	77.4		80.8	71.4	17.9	18.6	24.9	21.8	20.8	

67/B/2.6

STACKYARD SERIES C (W)

Treatment	Oats: GRAIN	Oats: STRAW	Sugar beet: ROOTS	Barley: GRAIN	Barley: STRAW	Ley: DRY MATTER 1st cut	Ley: DRY MATTER 2nd cut	Ley: DRY MATTER 3rd cut	Ley: DRY MATTER 4th cut	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	Total of 3 cuts
None	17.8	16.7	6.02	17.8	16.0	8.3	25.8	21.0	14.5	69.6	2.93	14.8	3.9	6.3	25.0
N1	30.9	42.8	9.26	26.5	28.0	5.0	35.3	20.6	13.4	74.3	3.40	21.7	11.2	15.6	48.5
P	19.1	19.8	7.87	17.2	15.3	7.9	28.1	17.0	11.0	64.0	2.93	14.0	3.8	5.1	22.9
N1P	34.1	40.1	6.02	19.1	19.8	4.3	34.3	15.9	12.6	67.1	2.86	22.7	11.8	16.3	50.8
K	18.4	18.9	7.87	22.4	21.8	12.9	31.3	29.9	13.1	87.2	4.32	20.0	10.8	7.0	37.8
N1K	31.9	41.1	9.88	32.4	34.5	11.4	41.1	32.0	15.1	99.6	6.72	27.8	13.7	15.0	56.5
PK	19.2	20.6	6.48	18.9	16.8	12.6	36.2	28.0	12.8	89.6	5.09	22.9	12.3	8.3	43.5
N1PK	32.6	46.6	12.66	37.5	45.4	11.7	44.0	25.8	13.0	94.5	7.18	28.1	12.6	16.5	57.2
N2PK	43.2	66.5	10.80	41.2	58.2	8.1	59.2	27.0	17.4	111.7	8.34	34.0	11.8	19.4	65.2
D	24.9	26.5	11.58	29.3	29.5	13.7	34.4	31.8	15.3	95.2	10.18	26.4	8.4	8.1	42.9
N1PKD	36.5	50.4	16.05	38.7	50.5	14.7	44.0	32.3	16.8	107.8	12.19	38.0	11.9	17.4	67.3
N2PKD	42.2	74.1	18.06	39.2	60.4	10.2	57.2	30.9	21.5	119.8	16.74	53.9	16.0	22.1	92.0
Mean D.M. %	82.2	52.0		78.1	65.7	15.0	17.0	31.2	23.6	21.7		20.2	38.8	28.9	29.3

67/B/2.7

STACKYARD C (W). Bed 1

SITKA SPRUCE

Treatment	MEAN HEIGHT: INCHES	PLANT NUMBER: PER SQ YARD
	(±0.113)	(±98.8)
None	1.82 (1)	987 (2)
PK Mg	2.06	999
NK Mg	1.20	924
NP Mg	1.81	1032
NPK	2.09	975
NPK Mg	2.27 (1)	938 (2)
NPK Mg F	2.25	957
C	2.16	642
C NPK Mg	2.72	1002
L NPK Mg	2.55	1017
Mean	2.08	950

(1) (±0.080) (2) (±69.8)

Bed 2 plots 1 - 6

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	8.16	9.77	10.45	9.46
NS	6.11	7.29	8.04	7.14

67/B/2.9

Bed 2 PLOTS 7 - 12

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	1.68	2.66	3.11	2.48
NS	1.34	2.09	2.38	1.94
	PLANT NUMBER: PER SQ YD			
SS	1164	1152	906	1074
NS	1110	1056	1194	1120

67/B/2.10

HIGHFIELD IX (R)

GRASS: DRY MATTER

	1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts
PK	(±1.94)	(±2.79)	(±2.09)	(±2.95)	(±4.92)
N0 00	6.6	34.2	26.5	23.1	90.4
N1 00	17.7	48.9	37.2	28.7	132.5
A1 00	15.8	48.3	38.9	26.1	129.2
N0 10	7.2	43.6	27.1	18.5	96.4
N1 10	28.5	52.5	41.3	27.9	150.3
A1 10	22.7	48.1	37.4	27.1	135.4
N0 01	8.2	40.1	29.3	20.0	97.7
N1 01	24.1	51.0	40.1	25.7	141.0
A1 01	20.3	49.8	33.6	28.8	132.5
N0 11	9.8	38.8	34.3	19.2	102.0
N1 11	23.6	55.5	39.1	28.6	146.8
A1 11	22.2	61.2	37.8	30.0	151.2
N2 11	25.9	62.5	44.7	25.3	158.4
A2 11	25.2	60.4	47.5	26.6	159.7
Mean	18.4	49.6	36.8	25.4	130.2

Mean D.M. %: 1st cut: 20.9
2nd cut: 21.7
3rd cut: 24.4
4th cut: 17.8
Total of 4 cuts: 21.2

67/B/3.1

GREEN MANURING EXPERIMENT

(WGM)

Woburn Stackyard 1967 (Lower half only).

For history, treatments, etc., see 'Details' 1962 and 'Results' 64/B/3, 65/B/3 and 66/B/3.

Area of each sub plot: 0.0223. Area harvested: 0.0144.

Treatments: All combinations of:-
Whole plots: A plots (no previous green manures): Green manures undersown 1966: Trefoil (T), ryegrass (R).
B plots (green manures 1936-63): Green manures undersown 1966: None (O), trefoil (T), ryegrass (R).
C plots (green manures 1936-65): No green manures 1966.
Half plots: Levels of nitrogen: 0.3 (N1), 0.6 (N2), 0.9 (N3), 1.2 cwt N (N4) as 'Nitro-Chalk'.

Cultivations, etc.: Fallow plots ploughed: Oct 22, Dec 5-14, 1966. All plots ploughed: Feb 2-3, 1967. Seed combine drilled at 140 lb: Mar 4. 'Nitro-Chalk' applied: Mar 16. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 25 gals): May 9. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 25 gals): May 31. (The second application was made because the first had little effect). Combine harvested: Aug 21. Variety: Maris Badger.

NOTE: Estimates of take-all (Ophiobolus graminis) were made in July.

SUMMARY OF RESULTS

GRAIN

	N1	N2	N3	N4	Mean
		A PLOTS			
T	29.2	34.7	37.6	35.9	34.3
R	18.8	22.4	33.1	31.2	26.4
Mean	24.0	28.5	35.4	33.5	30.4
		B PLOTS			
O	15.4	22.5	29.0	28.0	23.8
T	29.4	35.8	33.2	31.2	32.4
R	23.2	29.6	29.9	37.4	30.0
Mean	22.7	29.3	30.7	32.2	28.7
		C PLOTS			
T	16.8	24.9	29.7	30.4	25.4
R	17.6	26.4	32.7	30.0	26.7
Mean	17.2	25.6	31.2	30.2	26.1

Mean D.M. %: 86.5

LEY AND ARABLE ROTATIONS

(WLA)

Woburn Stackyard 1967 - the 30th year.

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

Potatoes: Because of the poor appearance of the crop in June plots were split for a test of nitrogen and magnesium sulphate:-
None (O), 1.84 lb N as 4% solution of urea per acre (U) and
None (OMg), 0.5 lb Mg as 5% solution of $MgSO_4$, 7 H_2O (Mg)
hand sprayed at 50 gal. The solutions contained 'Shellastol' wetter at 0.01%.
There was no apparent improvement in the appearance of the crop and yields taken of the sub plots were not taken separately.

Rye: The crop partially failed and was replaced with spring wheat, variety Kloka, which received a basal dressing of 0.6 cwt N as 'Nitro-Chalk' 21.

Corrective K dressings (in cwt K_2O) as muriate of potash, and the K equivalent of FYM for Block 5 (sugar beet 1967)

Continuous rotations	No dung plots	Dung plots
Ley	2	1
Sainfoin	4	3
Arable with hay	5	4
Arable	2	2
Alternating rotations		
Last 2 rotations in order		
Ley/arable	2	0
Sainfoin/arable with hay	3	3
Arable with hay/sainfoin	4	4
Arable/ley	3	2

NOTE: K equivalent of dung: In 1967 plots not receiving dung received 1.9 cwt K_2O as muriate of potash.

Cultivations, etc.:

Treatment crops.

Ley 1st year: Ploughed: Sept 29, 1966. Fertilisers applied: Mar 23, 1967. Seed sown at 40 lb: Mar 31. NK fertiliser applied: July 17, Aug 26. Grazed 4 circuits: July 5 - Oct 23.

Ley 2nd year: NK fertiliser applied to all plots: Mar 10, 1967, Aug 26. NK fertiliser applied to plots 31 and 32: June 28, and to plots 27 and 28: July 10. Grazed 9 circuits: Apr 18 - Oct 11.

Ley 3rd year: NK fertiliser applied: Mar 10, 1967, June 20, Aug 26. Grazed 9 circuits: Apr 18 - Oct 11.

Sainfoin 1st year: Ploughed: Sept 29, 1966. Fertilisers applied: Mar 23, 1967. Seed drilled at 70 lb: Apr 3. Cut once: Aug 7.
Sainfoin 2nd year: Sprayed with paraquat at 1 lb ion in 33 gals: Feb 6, 1967. N and K fertilisers applied: Mar 10. Cut twice: June 13, Aug 7.
Sainfoin 3rd year: Sprayed with paraquat at 1 lb ion in 33 gals: Feb 6, 1967. N and K fertilisers applied: Mar 10. Cut twice: June 13, Aug 7.

Arable rotations.

Potatoes: Ploughed: Sept 29, 1966. Fertilisers applied and potatoes planted: Mar 22, 1967. Earthed up: May 10. Test urea and magnesium sulphate sprayed on by hand: June 23. Sprayed with mancozeb at 1.2 lb in 30 gals: July 1, July 26, Aug 8. Sprayed with undiluted BOV at 15 gals: Aug 18. Harvested: Sept 12.
Rye: Deep-tine cultivated: Oct 20, 1966. Seed combine drilled at 150 lb: Oct 26. Crop partially failed, and sprayed with paraquat at 1 lb ion in 33 gals: Feb 7, 1967.
Spring wheat (replacing rye): Drilled at 170 lb: Mar 4, 1967. 'Nitro-Chalk' applied: Mar 20. Combine harvested: Aug 22.
Seeds hay: Seeds undersown in rye at 30 lb: Apr 26, 1966. NPK fertiliser applied: Mar 10, 1967. NK fertiliser applied: June 5. Cut twice: June 1, July 21.
Carrots: Ploughed: Sept 29, 1966. Deep-tine cultivated: Nov 16. Fertilisers applied, and seed drilled at 3.5 lb: Apr 3, 1967. Sprayed with linuron at 1 lb in 40 gals: May 31. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 35 gals): June 9, June 20, July 10. Lifted: Sept 29, Oct 2.

Test crops.

Sugar beet: Dung equivalent K, and half corrective K applied: Oct 28, 1966. Dung applied: Nov 2. Ploughed: Nov 2 - 3. Remaining corrective K, basal muriate of potash, and half basal superphosphate applied: Feb 14, 1967. Remaining basal superphosphate, basal magnesium sulphate, and test 'Nitro-Chalk' applied: Mar 29. Seed drilled at 5 lb: Mar 30. Singled: May 22 - 23. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 30 gals): June 9, July 10. Lifted: Oct 16.

Barley: Ground chalk applied at 40 cwt: Nov 4, 1966. Ploughed: Nov 5. Balancing muriate of potash, basal superphosphate, and 'Nitro-Chalk' applied: Mar 2, 1967. Seed drilled at 140 lb: Mar 4. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 35 gals): May 9. Combine harvested: Aug 18 - 21.

Standard errors per plot.

Sugar beet 1/8 plot:	
Roots:	0.878 or 4.7% (9 d.f.)
Total sugar:	2.63 or 4.5% (9 d.f.)
Tops:	1.109 or 7.2% (9 d.f.)
Barley, grain:	
Whole plot:	1.34 or 3.1% (4 d.f.)
1/2 plot:	1.91 or 4.5% (4 d.f.)

SUMMARY OF RESULTS

TREATMENT CROPS

LEY, SHEEP DAYS OF GRAZING

1st year	2nd year	3rd year
1168	2240	2168

SAINFOIN, DRY MATTER

	1st cut	2nd cut	Total
	1ST YEAR		
1965			
DO	14.8		14.8
D1	15.7		15.7
Lu	12.9		12.9
AR	17.6		17.6
Mean	15.2		15.2
	2ND YEAR		
1964			
DO	23.1	11.7	34.8
D1	22.2	10.0	32.2
Lu	23.2	9.3	32.5
AH	22.0	12.4	34.4
Mean	22.6	10.8	33.4

67/B/4.5

SAINFOIN, DRY MATTER

	1st cut	2nd cut	Total
	3RD YEAR		
1963			
DO	54.6	13.4	68.0
D1	50.6	13.1	63.7
Lu	50.8	11.6	62.4
AH	54.3	14.8	69.1
Mean	52.6	13.2	65.8

TREATMENT CROPS

	POTATOES		SPRING WHEAT	
	TOTAL TUBERS	% WARE	GRAIN	STRAW
DO	5.38	79.2	28.5	26.4
D1*	6.66	83.8	30.6	27.9
Ley	8.20	81.6	37.4	37.3
Lu	9.64	89.4	31.0	25.4
AH	3.80	81.0	17.6	16.6
AR	2.43	74.0	32.1	29.4
Mean	6.02	81.5	29.6	27.2

HAY

DRY MATTER

	1st cut	2nd cut	Total
1963			
DO	60.9	26.6	87.5
D1*	61.7	24.7	86.4
Ley	62.4	26.7	89.1
AH	60.2	24.6	84.8
Mean	61.3	25.6	86.9

* Dung applied: Potatoes - for test crop sugar beet in 1965
Rye - for test crop sugar beet in 1964
Hay - for test crop sugar beet in 1963

Mean D.M. %: Spring wheat, grain: 81.9
straw: 89.3

67/B/4.7

CARROTS

	Roots	Tops
1963		
D0	33.18	10.33
D1*	35.68	9.32
Lu	36.00	9.57
AR	32.86	10.08
Mean	34.43	9.82

* Dung applied for test crop sugar beet in 1963

67/B/4.8

1ST TEST CROP

SUGAR BEET

ROOTS

	N1.	N2	N3	N4	N5	N6
			(±0.621)*			
D0 Ley	17.22	19.66	18.60	19.95	-	-
Sa	17.89	17.30	18.60	18.10	-	-
AH	-	-	19.19	20.58	18.10	19.32
AR	-	16.67	16.92	16.12	17.55	-
D1 Ley	18.94	19.87	19.53	19.66	-	-
Sa	17.93	18.73	18.77	18.65	-	-
AH	-	-	19.99	18.86	20.20	20.84
AR	-	17.85	16.84	18.98	17.89	-

	Ley	Sa	AH	AR	Mean
CON	19.65	17.65	19.93	17.67	18.72
ALT	18.71	18.85	19.34	17.04	18.48
Mean	19.18	18.25	19.64	17.35	18.60

* For use in horizontal and interaction comparisons only.

67/B/4.9

1ST TEST CROP

SUGAR BEET

SUGAR %

	N1	N2	N3	N4	N5	N6
DO Ley	16.6	15.9	15.5	15.2	-	-
Sa	16.3	15.8	15.7	15.3	-	-
AH	-	-	16.7	16.4	15.8	15.8
AR	-	16.7	16.9	15.6	15.6	-
D1 Ley	15.9	15.4	15.1	15.0	-	-
Sa	16.1	15.6	15.4	15.2	-	-
AH	-	-	15.7	15.3	15.1	15.1
AR	-	16.3	15.5	15.5	15.3	-

	Ley	Sa	AH	AR	Mean
CON	15.8	15.6	15.7	16.2	15.8
ALT	15.4	15.8	15.8	15.6	15.7
Mean	15.6	15.7	15.7	15.9	15.7

67/B/4.10

1ST TEST CROP

SUGAR BEET

TOTAL SUGAR

	N1	N2	N3	N4	N5	N6
			(±1.86)*			
D0 Ley	57.1	62.7	57.8	60.6	-	-
Sa	58.4	54.6	58.4	55.3	-	-
AH	-	-	64.3	67.3	57.3	61.2
AR	-	55.8	57.2	50.4	54.8	-
D1 Ley	60.4	61.4	59.1	58.9	-	-
Sa	57.8	58.5	57.9	56.6	-	-
AH	-	-	62.6	57.7	61.1	62.7
AR	-	58.0	52.2	58.8	54.6	-

	Ley	Sa	AH	AR	Mean
CON	61.8	55.0	62.4	57.1	59.1
ALT	57.6	59.4	61.1	53.3	57.9
Mean	59.7	57.2	61.8	55.2	58.5

* For use in horizontal and interaction comparisons only.

67/B/4.11

1ST TEST CROP

SUGAR BEET

TOPS

	N1	N2	N3	N4	N5	N6
			(±0.785)*			
DO Ley	11.79	16.08	17.68	17.93	-	-
Sa	12.21	15.91	15.24	17.43	-	-
AH	-	-	11.87	16.42	16.16	16.25
AR	-	9.34	9.85	13.97	14.90	-
D1 Ley	14.65	16.16	16.75	17.26	-	-
Sa	14.82	16.16	17.85	18.69	-	-
AH	-	-	15.74	15.32	15.66	17.09
AR	-	13.64	16.16	17.68	18.52	-

	Ley	Sa	AH	AR	Mean
CON	15.17	15.22	16.23	13.41	15.01
ALT	16.90	16.86	14.90	15.11	15.94
Mean	16.04	16.04	15.56	14.26	15.47

* For use in horizontal and interaction comparisons only.

2ND TEST CROP

BARLEY

	Ley	Lu	AH	AR	Mean
1966		GRAIN			
		(1) and (2)			(±0.68)
DO	46.3	45.9	38.2	36.1	41.6
D1	44.4	43.7	43.5	42.5	43.5
Mean (±0.95)	45.3	44.8	40.9	39.2	42.6
1966		STRAW			
DO	45.3	45.0	31.1	35.0	39.1
D1	45.8	49.2	38.7	43.5	44.3
Mean	45.5	47.1	34.9	39.3	41.7

Mean D.M. %: Grain: 83.9
Straw: 89.2

(1) (±1.35) For use in horizontal and diagonal comparisons only.
(2) (±1.35) For use in vertical and interaction comparisons only.

67/B/5.1

WOBURN MARKET GARDEN EXPERIMENT

(WMG)

Organic manures, N, P and K - Lansome Field 1967, the seventh year with revised treatments.

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

Area of each sub-plot: carrots - 0.0062, sugar beet - 0.0017. Area harvested: carrots - 0.0007, sugar beet - 0.0016.

Treatment symbols:
FYM: None (D0), 10 (D1), 20 tons (D2).
PK compound (0:20:20): None (P0K0), 1.5 P2O5, 1.5 K2O (P1K1), 3.0 P2O5, 3.0 cwt K2O (P2K2).
Seed: All viable (S1), 3 parts killed, 5 parts viable (S2).
Peat: None (O), 12.5 tons (PT).

Treatments: All combinations of:
Series A (carrots)
FYM plots: Whole plots: FYM: D1, D2 as previously.
PK: P0K0, P1K1 as in 1966.
Half plots: Seed: S1, S2 (to strips of 4 half plots).
Fertiliser plots: Whole plots: PK: P1K1, P2K2 as in 1966.
Half plots: Seed: S1, S2 (to strips of 4 half plots).

NOTE: FYM plots received no N-fertiliser, remainder 0.9 cwt N as 'Nitro-Chalk'.

Series B, microplots, (sugar beet)
FYM plots: Whole plots: PK: P0K0, P1K1 as in 1966.
Half plots: FYM: D0, D1 on old D1 plots, D0, D2 on old D2 plots, as in 1966.
Quarter plots: Nitrogen: None (N0), 0.7 (N1), 1.4 (N2), 2.1 cwt N (N3) as 'Nitro-Chalk'.
Fertiliser plots: Whole plots: PK: P1K1, P2K2 as in 1966.
Half plots: Peat: O, PT as in 1966.
Quarter plots: Nitrogen: None (N0), 0.7 (N1), 1.4 (N2), 2.1 cwt N (N3) as 'Nitro-chalk', with (N3-N2+N1-N0) on half plots.

Basal applications: Series A (carrots): Weedkiller: Linuron at 0.5 lb in 40 gals. Insecticide: Demeton-s-methyl 3 oz in 35 gals: June 9, and 3 oz in 30 gals: June 20.
Series B, microplots (sugar beet): Insecticide: Dimethoate at 3 fluid oz in 40 gals.

Cultivations, etc.:-
Carrots Series A: Dung applied, all plots ploughed: Jan 16, 1967. Fertilisers applied: Apr 3. Seed drilled at 3.25 lb: Apr 4. Weedkiller applied: May 31. Insecticide applied: June 9, June 20. Lifted (1st harvest): July 18 - 20. (2nd harvest): Aug 2 - 4. Variety: Early Market.
Sugar beet Series B, microplots: Ground chalk applied at 40 cwt: Jan 13, 1967. PK fertiliser, peat and dung applied, plots dug by hand: Jan 24, 26. N fertiliser applied, seed drilled at 10 lb: Mar 30. Singled: May 23, 24, 25. Insecticide applied: June 9, 23, July 10, 25. Lifted: Oct 13, 16. Variety: Klein E.

NOTE: Soil samples were taken on Oct 5, 16, 1967 for an analysis of the amount of zinc and other heavy metals.

Standard errors per plot.
Carrots.

Marketable roots.	1st harvest:	Whole plots:	1.733 or 42.4%	(6 d.f.)
		1/2 plots:	0.637 or 15.6%	(8 d.f.)
	2nd harvest:	Whole plots:	2.973 or 25.7%	(6 d.f.)
		1/2 plots:	1.550 or 13.4%	(8 d.f.)
	Mean of 2 harvests:	Whole plots:	2.231 or 28.5%	(6 d.f.)
		1/2 plots:	0.974 or 12.4%	(8 d.f.)
Total produce.	1st harvest:	Whole plots:	3.658 or 41.7%	(6 d.f.)
		1/2 plots:	1.170 or 13.3%	(8 d.f.)
	2nd harvest:	Whole plots:	4.639 or 25.5%	(6 d.f.)
		1/2 plots:	2.387 or 13.1%	(8 d.f.)
	Mean of 2 harvests:	Whole plots:	3.905 or 29.0%	(6 d.f.)
		1/2 plots:	1.608 or 11.9%	(8 d.f.)

SUMMARY OF RESULTS

CARROTS

MARKETABLE ROOTS

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
			1ST HARVEST				
		(±0.866)			(±0.613)		
Mean	2.31	4.89	3.50	5.67	2.90	5.28	4.09
		(±1.225)			(±0.866)		(±0.613)
POKO	2.57	5.04	3.51	5.79	3.04	5.42	4.23
P1K1	2.05	4.73	3.48	5.55	2.77	5.14	3.95
		(1) and (2)			(3) and (4)		(±0.159)
S1	2.17	5.46	3.40	6.03	2.79	5.75	4.27
S2	2.45	4.31	3.59	5.30	3.02	4.81	3.91

(1) (±0.895) (3) (±1.266) For use in vertical and interaction comparisons
(2) (±0.318) (4) (±0.225) For use in horizontal and diagonal comparisons

67/B/5.4

CARROTS

MARKETABLE ROOTS

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
			2ND HARVEST				
		(±1.487)			(±1.051)		
Mean	8.47	13.57	10.03	14.17	9.25	13.87	11.56
		(±2.102)			(±1.487)		(±1.051)
POKO	8.82	13.74	10.47	14.79	9.64	14.27	11.96
P1K1	8.11	13.40	9.59	13.55	8.85	13.47	11.16
		(1) and (2)			(3) and (4)		(±0.388)
S1	9.37	13.76	10.34	14.73	9.85	14.25	12.05
S2	7.57	13.38	9.72	13.61	8.64	13.49	11.07

(1) (±1.584) (3) (±2.241) For use in vertical and interaction comparisons
(2) (±0.775) (4) (±0.548) For use in horizontal and diagonal comparisons

67/B/5.5

CARROTS

MARKETABLE ROOTS

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
	MEAN OF 2 HARVESTS						
	(±1.116)				(±0.789)		
Mean	5.39	9.23	6.76	9.92	6.08	9.57	7.82
	(±1.578)				(±1.116)		(±0.789)
POKO	5.69	9.39	6.99	10.29	6.34	9.84	8.09
P1K1	5.08	9.07	6.53	9.55	5.81	9.31	7.56
	(1) and (2)				(3) and (4)		(±0.244)
S1	6.52	10.15	6.12	9.84	6.32	10.00	8.16
S2	6.16	9.53	5.50	8.77	5.83	9.15	7.49

(1) (±1.168) (3) (±1.651) For use in vertical and interaction comparisons
(2) (±0.487) (4) (±0.344) For use in horizontal and diagonal comparisons

67/B/5.6

CARROTS

TOTAL PRODUCE

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
			1ST HARVEST				
		(±1.829)			(±1.293)		
Mean	4.97	10.88	7.30	11.92	6.14	11.40	8.77
		(±2.587)			(±1.829)		(±1.293)
P0K0	5.45	11.27	7.56	12.26	6.50	11.77	9.14
P1K1	4.50	10.48	7.03	11.57	5.77	11.03	8.40
		(1) and (2)			(3) and (4)		(±0.292)
S1	5.00	11.82	7.27	12.87	6.14	12.35	9.24
S2	4.94	9.93	7.33	10.96	6.14	10.45	8.29

(1) (±1.875) (3) (±2.652) For use in vertical and interaction comparisons
(2) (±0.585) (4) (±0.414) For use in horizontal and diagonal comparisons

67/B/5.7

CARROTS

TOTAL PRODUCE

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
			2ND HARVEST				
		(±2.320)			(±1.640)		
Mean	13.34	21.36	15.87	22.18	14.60	21.77	18.19
		(±3.280)			(±2.320)		(±1.640)
POKO	13.85	21.35	16.53	23.36	15.19	22.36	18.77
P1K1	12.84	21.37	15.20	21.01	14.02	21.19	17.60
		(1) and (2)			(3) and (4)		(±0.597)
S1	14.62	21.78	16.34	23.20	15.48	22.49	18.99
S2	12.06	20.94	15.39	21.16	13.73	21.05	17.39

(1) (±2.468) (3) (±3.491) For use in vertical and interaction comparisons
(2) (±1.194) (4) (±0.844) For use in horizontal and diagonal comparisons

67/B/5.8

CARROTS

TOTAL PRODUCE

DUNG PLOTS

Dung Organic manure applied	10 D1	20 D2	10 C1	20 C2	D1+C1	D2+C2	Mean
	MEAN OF 2 HARVESTS						
	(±1.953)				(±1.381)		
Mean	9.16	16.12	11.58	17.05	10.37	16.58	13.48
	(±2.761)				(±1.953)		(±1.381)
POKD	9.65	16.31	12.04	17.81	10.85	17.06	13.95
P1K1	8.67	15.93	11.12	16.29	9.89	16.11	13.00
	(1) and (2)				(3) and (4)		(±0.402)
S1	9.81	16.80	11.80	18.04	10.81	17.42	14.11
S2	8.50	15.44	11.36	16.06	9.93	15.75	12.84

(1) (±2.034) (3) (±2.876) For use in vertical and interaction comparisons
(2) (±0.804) (4) (±0.569) For use in horizontal and diagonal comparisons

CARROTS

MARKETABLE ROOTS

NO ORGANIC PLOTS

	S1	S2	Mean
	1ST HARVEST		
	(1) and (2)		(±0.858)
P1K1	2.79	2.50	2.64
P2K2	2.72	2.32	2.52
Mean (±0.135)	2.76	2.41	2.58

(1) (±0.890) For use in vertical and interaction comparisons
(2) (±0.332) For use in horizontal and diagonal comparisons

	2ND HARVEST		
	(1) and (2)		(±1.513)
P1K1	10.86	8.55	9.70
P2K2	6.47	7.27	6.87
Mean (±0.340)	8.66	7.91	8.29

(1) (±1.623) For use in vertical and interaction comparisons
(2) (±0.833) For use in horizontal and diagonal comparisons

67/B/5.10

CARROTS

MARKETABLE ROOTS

NO ORGANIC PLOTS

	S1	S2	Mean
	MEAN OF 2 HARVESTS (1) and (2)		(±1.127)
P1K1	6.82	5.53	6.17
P2K2	4.60	4.79	4.70
Mean (±0.218)	5.71	5.16	5.44

(1) (±1.188) For use in vertical and interaction comparisons
(2) (±0.533) For use in horizontal and diagonal comparisons

67/B/5.11

CARROTS

TOTAL PRODUCE

NO ORGANIC PLOTS

	S1	S2	Mean
	1ST HARVEST		
	(1) and (2)		(±1.869)
P1K1	5.47	4.78	5.13
P2K2	6.00	4.99	5.49
Mean (±0.284)	5.74	4.88	5.31

(1) (±1.933) For use in vertical and interaction comparisons
(2) (±0.696) For use in horizontal and diagonal comparisons

	2ND HARVEST		
	(1) and (2)		(±2.441)
P1K1	16.52	13.08	14.80
P2K2	10.30	11.25	10.77
Mean (±0.529)	13.41	12.16	12.79

(1) (±2.607) For use in vertical and interaction comparisons
(2) (±1.296) For use in horizontal and diagonal comparisons

67/B/5.12

CARROTS

TOTAL PRODUCE

NO ORGANIC PLOTS

	S1	S2	Mean
	MEAN OF 2 HARVESTS (1) and (2)		(±2.053)
P1K1	11.00	8.93	9.96
P2K2	8.15	8.12	8.13
Mean (±0.364)	9.58	8.52	9.05

(1) (±2.148) For use in vertical and interaction comparisons
(2) (±0.892) For use in horizontal and diagonal comparisons

67/B/5.13

SUGAR BEET

FERTILISER PLOTS

	N0	N1	N2	N3	0	PT	Mean
			CLEAN BEET				
P1K1	8.23	13.96	14.03	15.28	11.84	13.91	12.88
P2K2	10.90	16.45	17.63	17.42	15.15	16.05	15.60
Mean	9.56	15.21	15.83	16.35	13.50	14.98	14.24
0	9.19	13.64	15.42	15.74			
PT	9.94	16.78	16.24	16.95			
			SUGAR %				
P1K1	15.1	16.0	15.7	15.3	15.4	15.7	15.6
P2K2	15.8	16.3	16.2	15.4	16.0	15.9	15.9
Mean	15.5	16.1	16.0	15.4	15.7	15.8	15.7
0	15.4	16.2	15.8	15.3			
PT	15.6	16.0	16.1	15.5			
			TOTAL SUGAR				
P1K1	25.1	44.7	44.3	46.8	36.6	43.9	40.2
P2K2	34.5	53.3	57.0	53.8	48.4	50.9	49.6
Mean	29.8	49.0	50.7	50.3	42.5	47.4	44.9
0	28.7	44.2	49.0	48.1			
PT	30.9	53.8	52.4	52.5			

67/B/5.14

SUGAR BEET

FERTILISER PLOTS

	N0	N1	N2	N3	0	PT	Mean
			TOPS				
P1K1	6.70	10.40	13.00	14.85	11.11	11.36	11.24
P2K2	8.16	12.89	14.57	18.88	12.96	14.28	13.62
Mean	7.43	11.65	13.78	16.86	12.04	12.82	12.43
0	6.87	10.86	13.61	16.81			
PT	7.98	12.43	13.96	16.92			

PLANT NUMBER

P1K1	30.5	30.6	30.0	29.4	30.3	29.9	30.1
P2K2	30.6	31.0	29.8	31.6	30.8	30.7	30.8
Mean	30.6	30.8	29.9	30.5	30.6	30.3	30.4
0	31.1	30.3	30.0	30.8			
PT	30.0	31.3	29.8	30.2			

67/B/5.15

SUGAR BEET

DUNG PLOTS

	D1	D2	D1R	D2R	Mean
			CLEAN BEET		
Mean	17.31	20.48	15.44	17.97	17.80
F00	16.73	19.92	14.13	16.64	16.86
F11	17.89	21.04	16.75	19.30	18.74
N0	15.13	18.85	12.08	15.63	15.42
N1	18.21	20.26	15.77	18.28	18.13
N2	17.91	21.63	16.71	19.33	18.89
N3	18.00	21.18	17.19	18.64	18.75
			SUGAR %		
Mean	15.5	15.2	15.6	15.5	15.5
F00	15.5	15.2	15.4	15.3	15.3
F11	15.5	15.2	15.9	15.8	15.6
N0	16.0	15.9	15.6	15.3	15.7
N1	15.5	15.3	16.4	16.0	15.8
N2	15.5	15.2	15.4	15.6	15.4
N3	14.9	14.5	15.1	15.2	14.9
			TOTAL SUGAR		
Mean	53.4	62.3	48.2	55.9	54.9
F00	51.7	60.8	43.4	50.9	51.7
F11	55.0	63.8	53.0	60.9	58.2
N0	48.3	59.7	37.9	48.0	48.5
N1	56.4	62.0	51.3	58.5	57.1
N2	55.3	65.6	51.5	60.6	58.3
N3	53.4	61.9	52.0	56.4	55.9

67/B/5.16

SUGAR BEET

DUNG PLOTS

	D1	D2	D1R	D2R	Mean
			TOPS		
Mean	14.46	20.28	11.90	15.64	15.57
F00	14.39	19.98	11.37	15.35	15.27
F11	14.53	20.59	12.43	15.92	15.87
N0	10.65	16.41	7.72	11.72	11.63
N1	14.63	20.84	10.16	14.28	14.98
N2	14.14	19.90	13.85	17.21	16.28
N3	18.41	23.97	15.85	19.34	19.39
			PLANT NUMBER		
Mean	30.0	30.5	31.0	31.8	30.8
F00	30.3	30.2	30.7	32.0	30.8
F11	29.7	30.7	31.3	31.5	30.8
N0	30.1	30.2	32.5	31.7	31.1
N1	29.6	31.1	30.4	32.5	30.9
N2	30.7	30.9	29.6	31.1	30.6
N3	29.6	29.8	31.7	31.8	30.7

RESIDUAL PHOSPHATE ROTATION

(RP)

The long term and residual effects of phosphate fertilisers - Great Field IV and Sawyers I, revised 1967, the 8th year.

For treatments and results 1960 - 1965, see 'Details 1967'.

Design: Great Field IV: 1 randomised block of 12 plots per crop.
Sawyers I: 2 randomised blocks of 12 plots per crop.

Rotation: Potatoes, barley, swedes (Barley 1967 followed potatoes 1965 - whole area fallow in 1966).

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.

Treatments, (cwt P2O5):

1st and 2nd Crop rotations 1960 - 65. All superphosphate as granular superphosphate

3rd and 4th Crop rotations 1967 - 72. All treatments as granular superphosphate 24.4% P2O5

Material and crop year applied	Total P2O5	Old Symbol	When applied	Total P2O5	New Symbol
None	0	(1)	None	0	(0)
Superphosphate annually	1.5	(2)	Annually	1.5	(A1)
Superphosphate annually	3.0	(3)	Annually	3.0	(A2)
Nitrophosphate I 1960	3.0	(6)	Annually	6.0*	(A3)
Nitrophosphate II 1960	3.0	(7)	Annually	9.0*	(A4)
Superphosphate in 1962,1965	1.5	(4)	1969, 1972	1.5	(T1)
Superphosphate in 1962,1965	3.0	(5)	1969, 1972	3.0	(T2)
Nitrophosphate III 1960	3.0	(8)	1967	3.0*	(R2)
Basic slag 1960	3.0	(10)	1967	6.0*	(R3)
Potassium metaphosphate 1960	3.0	(11)	1967	9.0*	(R4)
Gafsa in 1960	3.0	(9)	None	0	(G1)
Superphosphate in 1960	3.0	(12)	None	0	(S1)

* Allocated at random to old treatments 6 7 8 10 11 within each block.

https://doi.org/10.23637/ERADOC-1-157

Basal applications: Broadcast in spring before sowing or planting:
N as 'Nitro-Chalk':
To potatoes: 1.2 cwt, to swedes: 0.5 cwt, to barley (Sawyers I only): 0.6 cwt.
K2O as sulphate of potash:-
To potatoes: 1.5 cwt, to barley: 1.0 cwt, to swedes: 1.0 cwt.

Varieties: Potatoes - Majestic, barley - Maris Badger, swedes - Wilhelmsburger.

Cultivations, etc. (both fields): Ploughed: Great Field IV - Dec 8, 1965 - Jan 4, 1966, Sawyers I - Jan 7. Rotary cultivated: May 19. Granular superphosphate applied (treatments R2, R3 and R4): 1st half dressing - June 9, 2nd half dressing - Sept 9. Ploughed: Sept 15, 1966. Ground chalk applied at 23 cwt: Dec 28, 1966 - Jan 2, 1967.

Potatoes: Fertilisers applied: Apr 13, 1967. Plots rotary cultivated, potatoes planted: Apr 17. Sprayed with paraquat at 0.5 lb ion and linuron at 0.75 lb in 37 gals: May 18. Sprayed four times with mancozeb at 1.2 lb in 30 gals: June 29, July 20, Aug 4, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 7. Haulm destroyed mechanically: Sept 15. Lifted: Sept 19.
Barley: Fertilisers applied: Feb 8, 1967. Seed drilled at 140 lb: Mar 6. 'Nitro-Chalk' applied: Mar 21. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals): May 12. Combine harvested: Aug 22.
Swedes: Fertilisers applied: May 10, 1967. Seed drilled at 1.25 lb: May 11. Singled: June 14. Lifted: Nov 10.

Standard errors per plot.
Sawyers I

Potatoes, Total tubers:	0.724 or 4.9% (11 d.f.)
Barley, Grain:	3.18 or 8.2% (11 d.f.)
Swedes:	0.935 or 7.5% (11 d.f.)

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
		(±0.512)		
0	15.73	14.04	97.2	97.7
A1	16.28	13.68	97.1	96.4
A2	17.77	14.30	96.3	97.2
A3	18.02	14.67	96.5	96.9
A4	19.40	15.20	97.4	96.7
T1	15.33	13.56	97.7	97.0
T2	16.96	14.27	97.9	97.4
R2	17.79	16.17	95.9	97.3
R3	20.32	16.62	96.9	95.7
R4	20.75	17.51	96.4	96.6
G1	16.36	13.09	98.8	96.9
S1	16.52	14.52	98.3	97.6
Mean	17.60	14.80	97.2	96.9

BARLEY

	GRAIN		STRAW	
		(±2.25)		
0	17.3	25.7	17.3	14.4
A1	34.9	39.9	23.8	27.1
A2	33.4	39.4	25.7	25.4
A3	32.4	40.5	25.5	26.1
A4	23.6	44.0	19.1	30.4
T1	25.5	34.2	16.1	21.5
T2	35.6	39.6	24.9	22.6
R2	36.1	38.0	29.5	26.0
R3	21.2	48.8	18.5	34.9
R4	39.4	43.9	27.2	31.0
G1	28.8	37.3	22.1	23.4
S1	37.6	37.2	26.0	20.8
Mean	30.5	39.0	23.0	25.3
Mean D.M. %:	82.2	84.5	83.8	90.7

67/B/6.4

SWEDES, ROOTS

Treat -ment	Great Field IV Mean	Sawyers I Mean
		(±0.661)
0	6.53	6.73
A1	10.28	11.18
A2	14.86	12.59
A3	15.83	14.33
A4	15.28	14.12
T1	11.39	8.27
T2	13.98	13.85
R2	16.02	16.37
R3	16.85	17.89
R4	16.99	17.40
G1	9.08	8.57
S1	11.53	8.73
Mean	13.22	12.50

67/B/7.1

CULTIVATION - WEEDKILLER ROTATION

(CW)

Great Harpenden 1967 - the 7th 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.

Area harvested: Beans - 0.0100, wheat, potatoes and barley - 0.0107.

Revised basal dressings:-
Potatoes: 10 cwt (13:13:20).
Spring wheat: 3 cwt (25:10:10).
Barley: 3 cwt (25:10:10).
Wheat and barley: Basal post-emergence weedkiller was applied in 1967, the test of none v. weedkiller being omitted because of unusually large quantities of weeds.

NOTE: After the potato crop of 1966 all plots were spring-tine cultivated twice in autumn and once in spring. The resulting tilth on the A and B plots (which had had no other cultivation) was considered adequate and no other cultivations were done before sowing barley.

Cultivations, etc.:-
Spring beans: T plots deep-tine cultivated, depth 3-4 ins: Nov 5, 1966. T plots deep-tine cultivated, depth 5-6 ins: Nov 11. P and C plots ploughed: Nov 15. R plots rotary cultivated, depth 6 ins: Nov 17. B plots sprayed with paraquat at 0.75 lb ion in 40 gals: Nov 21. B plots deep-tine cultivated, depth 4-5 ins: Nov 29. P, C and T plots spring-tine cultivated: Mar 4, 1967. P, C, T and B plots spring-tine cultivated: Mar 7. A plots rotary cultivated, seed drilled at 200 lb, S plots sprayed: Mar 8. M and C plots tractor-hoed twice: May 2 and June 2. Sprayed with demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals): June 13 and July 7 (the second spray to edges of blocks only). Sprayed by aircraft with demeton-s-methyl (Metasystox at 12 fluid oz in 3 gals): July 11. Combine harvested: Sept 1. Variety: Tarvin.
Spring wheat: Sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Sept 19, 1966. T plots deep-tine cultivated, depth 3-4 ins: Nov 5, 1966. T plots deep-tine cultivated, depth 5-6 ins: Nov 12. P and C plots ploughed: Nov 14. R plots rotary cultivated, depth 6 ins: Nov 17. Plots spring-tine cultivated - B plots: Nov 29, P, T, C and B plots:

Mar 3, 1967, P and C plots: Mar 7, P, T, R and C plots: Mar 15. A plots rotary cultivated, seed drilled at 175 lb:

Mar 15. All plots rolled: Apr 18. All plots sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals): May 12. Combine harvested: Aug 24. Variety: Kloka.

Potatoes: T plots deep-tine cultivated, depth 3-4 ins: Nov 5, 1966. T plots deep-tine cultivated, depth 5-6 ins: Nov 12. P and C plots ploughed: Nov 14. R plots rotary cultivated: Nov 18. P, T and C plots deep-tine cultivated: Mar 20, 1967. Basal compound fertiliser applied: Mar 22. P, T and C plots spring-tine cultivated twice: Mar 29 and Apr 3. R, A and B plots rotary cultivated, potatoes machine planted: Apr 4. Ridges rolled: Apr 28. S plots sprayed: May 9. M and C plots grubbed: May 12. M plots mechanically weeded twice: May 13. C plots mechanically weeded twice: May 19. M and C plots grubbed: June 14. All plots sprayed with mancozeb at 1.2 lb in 30 gals: June 29. M, C and Y plots rotary ridged: June 30. All plots sprayed three times with mancozeb at 1.2 lb in 30 gals: July 20, Aug 4, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 6. Haulm destroyed mechanically: Sept 13. Lifted: Sept 14. Variety: Pentland Dell.

Barley: All plots sprayed with sodium trichloroacetate at 18 lb in 40 gals: Oct 22, 1966. All plots spring-tine cultivated: Nov 1. All plots sprayed with sodium trichloroacetate at 18 lb in 40 gals: Nov 21. All plots spring-tine cultivated: Nov 29. T plots deep-tine cultivated, first stroke at 20 , second at 40 , depth 6-7 ins, P and C plots ploughed: Jan 17, 1967. R plots rotary cultivated, depth 6 ins: Feb 6. All plots spring-tine cultivated: Mar 4. P, T and C plots spring-tine cultivated, seed drilled at 140 lb: Mar 6. All plots rolled: Apr 18. All plots sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals): May 12. Combine harvested: Aug 21. Variety: Maris Badger.

Standard errors per whole plot.

Spring beans.	Grain:	2.93 or 9.6% (8 d.f.)
Wheat.	Grain:	6.22 or 15.7% (8 d.f.)
Potatoes.	Total tubers:	1.887 or 13.7% (8 d.f.)
Barley.	Grain:	1.94 or 4.2% (8 d.f.)

SUMMARY OF RESULTS

	P	R	T	Mean
SPRING BEANS				
GRAIN				
Mean (±1.20)	32.5	29.7	29.9	30.7
M (±2.08)	33.1	28.8	29.8	30.6 (±1.20)
S (±1.47)	32.2	30.1	30.0	30.8 (±0.85)
	A		B	C
	32.9		31.9	30.6

General mean: 31.0

Mean D.M. %: 81.6

SPRING WHEAT				
GRAIN				
Mean (±2.54)	37.5	41.6	40.1	39.7
M (±4.40)	34.6	39.2	41.0	38.3 (±2.54)
S (±3.11)	38.9	42.8	39.6	40.5 (±1.80)
	A		B	C
	42.4		45.8	43.6

General mean: 40.8

Mean D.M.%: 82.2

67/B/7.4

	P	R	T	Mean
		POTATOES		
		TOTAL TUBERS		
Mean (±0.770)	14.76	13.35	13.11	13.74
		(±1.334)		(±0.770)
M	14.38	12.09	11.20	12.56
S	13.89	14.23	14.45	14.19
SY	16.00	13.73	13.68	14.47
		A	B	C
		15.50	14.50	12.23

General mean: 13.82

		% WARE		
Mean	97.7	96.5	96.2	96.8
M	97.9	97.2	96.8	97.3
S	97.4	96.5	94.2	96.1
SY	97.9	95.8	97.6	97.1
		A	B	C
		97.4	96.1	97.5

General mean: 96.8

67/B/7.5

BARLEY

GRAIN

	P	R	T	Mean
Mean (±0.79)	46.6	45.6	47.1	46.4
		(±1.38)		(±0.79)
M	47.0	43.8	46.8	45.9
S	46.1	46.6	48.3	47.0
SY	46.7	46.4	46.1	46.4

A	B	C
44.4	45.6	45.0

General mean: 46.1

Mean D.M. %: 80.4

67/B/8.1

CULTIVATION - WEEDKILLER ROTATION

(WCW)

A comparison of weed control by various cultivation methods and by a pre-emergence weedkiller - Woburn Great Hill I and II 1967, the eighth year.

For history, rotation, treatments etc., to barley, see 'Results' 60/B/11, 61/B/11, 62/B/11, 63/B/11, 64/B/10, 65/B/9 and 66/B/8.

Area of each plot: 0.0482. Area harvested: Potatoes - 0.0107, barley - 0.0227.

Potatoes.
Treatments: All combinations of:-

1. Primary cultivations: Ploughed (P), rotary cultivated (R), deep-tine cultivated (T).
2. Weedkiller: None, normal cultivations (M), linuron at 0.25 lb, plus paraquat at 0.75 lb ion in 50 gals (S).

NOTE: Weeds grew very vigorously and so all plots were rotary-ridged, except plot 36 where the haulm was exceptionally large and would have been damaged.

Basal applications:
Barley: 340 lb (20:10:10) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 5 pints in 25 gals).
Potatoes: 10 cwt (17:11:22). Weedkiller: Dalapon at 9 lb in 33 gals. Fungicide: Mancozeb at 1.2 lb in 30 gals. Fentin acetate at 4.2 oz plus maneb at 1.4 oz in 30 gals. Haulm destroyer: Undiluted BOV at 15 gals.

Cultivations, etc.:
Potatoes: Weedkiller applied: Oct 7, 1966. Ground chalk applied at 40 cwt: Nov 3. T plots deep-tine cultivated (two strokes): Nov 15. P plots ploughed: Nov 15-16. R plots rotary cultivated: Nov 21. P and T plots spring-tine cultivated, and basal NPK applied: Mar 20, 1967. P and T plots spring-tine cultivated (twice): Mar 22. R plots rotary cultivated, potatoes machine planted: Mar 23. M plots harrowed: Apr 20. M plots re-ridged: Apr 28. S plots sprayed with weedkiller: May 3. M plots earthed up: May 10. All plots (except plot 36) rotary ridged:

June 9. Sprayed fungicide: July 1 and July 26. Sprayed haulm destroyer: Aug 22. Lifted: Sept 21. Variety: Maris Piper.

Barley: Ground chalk applied at 40 cwt: Nov 3, 1966. T plots deep-tine cultivated (two strokes), and P plots ploughed: Nov 15. R plots rotary cultivated: Nov 21. All plots spring-tine cultivated: Feb 15, 1967. 'Nitro-Chalk' applied: Feb 16. Seed combine drilled at 140 lb: Mar 3. Sprayed weedkiller: Apr 28. Combine harvested: Aug 18. Variety: Maris Badger.

Standard errors per plot.

Potatoes, total tubers: 1.371 or 32.9% (8 d.f.)
Barley, grain: 1.73 or 6.0% (8 d.f.)

67/B/8.3

SUMMARY OF RESULTS

POTATOES

	M	S	Mean
	TOTAL TUBERS		
	(±0.970)	(±0.685)	(±0.560)
P	4.67	4.30	4.42
R	3.84	4.51	4.29
T	3.33	4.01	3.79
Mean (±0.560)	3.95	4.28	4.17

% WARE

P	80.5	82.5	81.8
R	79.3	81.4	80.7
T	77.6	83.5	81.5
Mean	79.1	82.5	81.4

67/B/8.4

BARLEY

GRAIN

	N1	N2	N3	Mean
		(±1.23)		(±0.71)
P	26.1	29.0	30.1	28.4
R	26.5	29.3	34.1	29.9
T	24.1	29.1	32.0	28.4
Mean (±0.71)	25.6	29.1	32.0	28.9

Mean D.M. %: 83.7

INTENSIVE CEREALS

(WIC)

Woburn Stackyard Classical Site 1967 - the second year

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

Crop sequence symbols

	Year									
	66	67	68	69	70	71	72	73	74	75
C1	L	P	W	W	W	L	P	W	W	W
C2	P	W	W	W	L	P	W	W	W	L
C3	W	W	W	L	P	W	W	W	L	P
C4	W	W	L	P	W	W	W	L	P	W
C5	W	L	P	W	W	W	L	P	W	W
C6	W	W	W	W	W	W	W	W	W	W

Area of each sub plot: 0.0103. Area harvested: Ley - 0.0022, wheat and barley - 0.0066, potatoes - 0.0069.

Basal applications:

All crops: 1.0 cwt P2O5, 2.0 cwt K2O, 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 basal PK applied, ploughed: Sept 14, 1966.

Ley: Remaining basal PK applied, seed sown at 29 lb: Sept 16. 'Nitro-Chalk' applied: Mar 17, 1967. Cut three times for hay: June 1, July 13, Sept 12.

Potatoes: Remaining basal PK, and 'Nitro-Chalk' applied: Mar 17, 1967. Potatoes planted: Mar 22. Earthed up: June 10. Sprayed with mancozeb at 1.2 lb in 30 gals: July 1, July 26, Aug 8. Sprayed with fentin acetate at 4.2 oz plus maneb at 1.4 oz in 30 gals: Aug 21. Sprayed with undiluted BOV at 15 gals: Sept 6. Lifted: Sept 12. Variety: Majestic.

Wheat: Remaining PK applied: Oct 21. Seed drilled at 210 lb: Oct 26. 'Nitro-Chalk' applied: Apr 14, 1967. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 25 gals): Apr 27. Combine harvested: Aug 22. Variety: Cappelle.

Barley: Remaining PK applied, and seed drilled at 140 lb: Mar 4, 1967. 'Nitro-Chalk' applied: Mar 17. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 25 gals): Apr 27. Combine harvested: Aug 18. Variety: Maris Badger.

NOTES: (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.

(2) Leaf samples of potato and wheat were taken in June for mineral analysis. N P and K levels were normal while Mn levels were high and Ca and Mg were low.

Standard errors per plot. Grain:
Wheat sub plot: 6.76 or 18.6% (12 d.f.)
Barley sub plot: 2.57 or 6.5% (12 d.f.)

67/B/9.3

SUMMARY OF RESULTS

LEY (C5)

PERMANENT WHEAT BLOCK

N1	N2	N3	N4	Mean
		1ST CUT		
37.3	40.5	47.0	46.5	42.8
		2ND CUT		
5.7	6.4	7.5	10.7	7.5
		3RD CUT		
12.7	10.8	12.4	10.3	11.5
		TOTAL OF 3 CUTS		
55.7	57.7	66.8	67.5	61.9

Mean D.M. %: 1st cut: 22.5
2nd cut: 28.7
3rd cut: 25.3
Total of 3 cuts: 25.5

67/B/9.4

LEY

PERMANENT BARLEY BLOCK

N1	N2	N3	N4	Mean
		1ST CUT		
49.6	51.8	59.3	54.7	53.9
		2ND CUT		
8.7	8.3	10.6	10.1	9.4
		3RD CUT		
11.8	10.3	10.0	10.6	10.7
		TOTAL OF 3 CUTS		
70.1	70.5	80.0	75.3	74.0

Mean D.M. %: 1st cut: 22.8
2nd cut: 28.6
3rd cut: 25.2
Total of 3 cuts: 25.6

POTATOES

	Permanent wheat block	Permanent barley block
Total tubers	5.16	10.60
% ware	89.1	92.3

WHEAT (C2, C3, C4, C6)

	N1	N2	N3	N4	Mean
		(±4.78)*			[redacted]
C2	39.0	50.5	48.3	53.2	47.7
C3	26.7	33.4	45.6	36.3	35.5
C4	23.4	33.7	28.3	39.2	31.1
C6	24.2	28.5	38.6	32.7	31.0
Mean (±2.39)	28.3	36.5	40.2	40.4	36.3

Mean D.M. %: 84.5

BARLEY (C2, C3, C4, C6)

	N1	N2	N3	N4	Mean
		(±1.81)*			[redacted]
C2	32.8	44.4	45.8	39.7	40.7
C3	31.9	42.9	41.2	39.0	38.8
C4	30.8	44.6	43.3	40.6	39.8
C6	30.2	39.1	41.9	41.4	38.1
Mean (±0.91)	31.4	42.7	43.0	40.2	39.3

Mgan D.M. %: 84.4

* For use in horizontal and interaction comparisons

67/C/1.1

LEVELS OF K AND Mg

(LM)

K and Mg - Rothamsted Sawyers I - the 9th year, barley.

For details of treatments, etc. see 'Results' 66/C/1, and 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.

Area of each plot: 0.0209. Area harvested: 0.0139.

Basal applications: 0.5 cwt P_2O_5 as triple superphosphate in seedbed, 0.5 cwt N as 'Nitro-Chalk' in seedbed. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Cultivations, etc.: Ploughed: Jan 18, 1967. K, Mg and Na fertilisers applied: Feb 24. 'Nitro-Chalk' and triple superphosphate applied: Mar 3. Seed drilled at 140 lb: Mar 7. Weedkiller applied: May 12. Combine harvested: Aug 22. Variety: Maris Badger.

NOTE: On June 2 green crop samples were taken for determination of the percentages of K, Na, Ca and Mg. Soil samples were taken for pH and exchangeable cation measurements.

Standard error per plot (Pooled).
Grain: 4.96 or 17.1% (34 d.f.)

67/C/1.2

SUMMARY OF RESULTS

BARLEY. GRAIN

BLOCKS RECEIVING SODIUM TREATMENTS

	Mg0	Mg1	Mg2	K0	K1	K2	Na0	NaC1	NaC	Mean
					(±1.65)*					
Ca1	18.5	22.8	26.4	12.5	25.3	29.8	24.7	24.3	18.7	22.6
Ca2	30.6	32.6	35.2	25.0	37.2	36.2	33.2	33.1	32.1	32.8
Mean (±1.17)	24.6	27.7	30.8	18.8	31.3	33.0	29.0	28.7	25.3	27.7

	K0	K1	K2	Na0	NaC1	NaC		Na0	NaC1	NaC
		(±2.02)			(±2.02)				(±2.02)	
Mg0	16.9	26.7	30.1	24.5	26.8	22.4	K0	21.2	19.4	15.6
Mg1	18.4	32.5	32.2	29.6	29.5	23.8	K1	31.0	31.8	31.0
Mg2	21.1	34.6	36.8	32.8	29.8	29.8	K2	34.7	34.8	29.5

* For use in horizontal and interaction comparisons

Mean D.M. %: 80.2

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BARLEY. STRAW

BLOCKS RECEIVING SODIUM TREATMENTS

	MgO	Mg1	Mg2	KO	K1	K2	NaO	NaC1	NaC	Mean
Ca1	11.9	12.2	12.9	7.8	13.3	15.9	13.4	12.7	10.8	12.3
Ca2	18.3	19.6	20.9	14.7	21.6	22.4	20.8	19.8	18.1	19.6
Mean	15.1	15.9	16.9	11.3	17.5	19.2	17.1	16.3	14.5	16.0

	KO	K1	K2	NaO	NaC1	NaC
MgO	11.2	15.8	18.4	14.7	16.2	14.4
Mg1	10.3	17.9	19.6	18.0	16.4	13.4
Mg2	12.3	18.7	19.6	18.7	16.4	15.6

	NaO	NaC1	NaC
KO	12.3	11.4	10.0
K1	17.4	18.6	16.4
K2	21.8	18.8	17.0

Mean D.M. %: 80.9

67/C/1.3

BARLEY. GRAIN

BLOCKS NOT RECEIVING SODIUM TREATMENTS

	K0	K1	K2	Mg0	Mg1	Mg2	Mean
		(±2.86)*			(±2.86)*		
Ca1	20.9	35.5	36.0	25.8	32.0	34.6	30.8
Ca2	26.5	43.3	33.5	32.4	36.7	34.2	34.4
					(±3.50)		(±2.02)
		K0		16.0	28.3	26.8	23.7
		K1		37.0	42.8	38.3	39.4
		K2		34.3	31.9	38.0	34.7
		Mean (±2.02)		29.1	34.3	34.4	32.6

* For use in horizontal and interaction comparisons

https://doi.org/10.23637/ERADOC-1-157

67/c/1.5

BARLEY. STRAW

BLOCKS NOT RECEIVING SODIUM TREATMENTS

	K0	K1	K2	Mg0	Mg1	Mg2	Mean
Ca1	11.2	19.1	22.0	14.4	17.9	20.0	17.4
Ca2	16.1	27.8	21.1	21.9	23.2	19.9	21.7
		K0		9.0	17.6	14.3	13.6
		K1		21.1	25.3	24.0	23.5
		K2		24.3	18.8	21.6	21.6
		Mean		18.1	20.6	20.0	19.5

67/C/2.1

INTENSIVE BARLEY GROWING EXPERIMENT

(IB)

Little Knott I - 1967, the seventh 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 - 0.0140, barley - 0.0139.

Basal applications: 9 cwt (13:13:20) to potatoes, otherwise manures as previously.

Weedkillers: All crops: Aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals. Winter wheat: Ioxynil/mecoprop (Actril C at 6 pints in 32 gals). Oats, spring wheat and barley: Ioxynil/mecoprop (Actril C at 5 pints in 20 gals).

Insecticide: Spring beans: Demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals, and at 15 fluid oz in 37 gals by hand).

Fungicide: Potatoes: Mancozeb at 1.2 lb in 30 gals on three occasions.

Cultivations, etc.: Aminotriazole etc. applied: Sept 17, 1966.

Ploughed: Oct 14 - 21.

Spring beans: Seed placement drilled at 200 lb: Mar 8, 1967. Insecticide applied: June 13 and July 7. Combine harvested: Sept 1. Variety: Tarvin.

Spring wheat: Seed combine drilled at 175 lb: Mar 4, 1967. 'Nitro-Chalk' applied: Mar 20. Weedkiller applied: May 12. Combine harvested: Aug 23.

Barley: Seed combine drilled at 140 lb: Mar 4, 1967. 'Nitro-Chalk' applied: Mar 20. Weedkiller applied: May 12. Combine harvested: Aug 17.

Winter wheat: Seed combine drilled at 155 lb: Oct 27, 1966. 'Nitro-Chalk' applied: Mar 20, 1967. Weedkiller applied: Apr 27. Cut and carted because of a severe infestation with Black grass (Alopecurus myosuroides): June 21. Plots rotary cultivated three times: June 22, July 17, Aug 12.

Potatoes: Basal NPK applied: Apr 5, 1967. Rotary cultivated, potatoes machine planted: Apr 6. Fungicide applied: June 29, July 20, Aug 4. Lifted: Sept 12.

NOTES: (1) Yields were taken only for sequences 1, 2, 3, 4, 5, 7 (Barley), and 8 (Spring wheat).
(2) Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in spring and summer.
(3) For the previous years' results see 'Results' 61/C/8, 62/C/7, 63/C/2, 64/C/2, 65/C/2, 66/C/2.

Standard error per plot.
Barley, grain: 4.03 or 11.4% (23 d.f.)

SUMMARY OF RESULTS

SPRING WHEAT (8)

Crop in					
61			SW		
62			SW		
63			SW		
64			SW		
65			SW		
66			SW		
	N0	N1	N2	N3	Mean
	18.2	23.2	34.9	39.1	28.9

Mean D.M. %: 81.3

BARLEY (1,2,3,4,5,7)

Crop in 61 62 63 64 65 66	N0	N1	N2	N3	Mean
		(±2.85)			(±1.43)
O Be B B B B	14.2	35.6	40.3	46.3	34.1
SW O Be B B B	25.6	30.3	37.0	39.8	33.2
O SW O Be B B	17.8	27.6	35.5	43.2	31.0
Be O SW O Be B	18.1	40.6	43.3	45.5	36.9
SW Be O SW O Be	38.9	39.0	46.4	47.9	43.0
B B B B B B	20.2	32.5	41.9	44.1	34.7
Mean (±1.16)	22.5	34.3	40.7	44.5	35.5

Mean D.M. %: 79.0

67/C/3.1

LONG TERM LIMING EXPERIMENT - BARLEY

(LL and WLL)

Rothamsted Sawyers I and Woburn Stackyard Series C - the sixth 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 and 66/C/3.

Area of each plot: 0.0289. Area harvested: 0.0128.

Basal applications:

Sawyers I (R): 0.75 cwt N as 'Nitro-Chalk' combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Stackyard Series C (W): 0.62 cwt N as sulphate of ammonia broadcast in the seedbed, 0.38 cwt applied by hand as top-dressing. Weedkillers: Aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 33 gals. Ioxynil/mecoprop (Actril C at 5 pints in 35 gals) on 2 occasions. (The second application was made because the first had little effect).

Cultivations, etc.:-

Sawyers I (R): Ploughed: Sept 16, 1966. P and K applied: Feb 22, 1967. Seed drilled at 140 lb: Mar 3. Weedkiller applied: May 12. Combine harvested: Aug 22. Variety: Maris Badger.

Stackyard Series C (W): Aminotriazole and ammonium thiocyanate applied: Sept 27, 1966. Ploughed: Oct 28. P and K applied: Feb 24, 1967. Sulphate of ammonia applied, seed drilled at 140 lb: Mar 4. Remainder of sulphate of ammonia applied: Mar 21. Ioxynil/mecoprop applied: May 9 and 31. Combine harvested: Aug 21. Variety: Maris Badger.

Standard errors per plots. Grain:

Sawyers I (R): 7.16 or 26.0% (15 d.f.)

Stackyard Series C (W): 3.04 or 9.2% (15 d.f.)

67/C/3.2

SUMMARY OF RESULTS

SAWYERS I (R)

GRAIN

	CA0	CA2	CA4	CA8	Mean
Mean (±2.53)	11.5	34.5	33.6	30.8	27.6
		(±3.58)			(±1.79)
-	7.7	30.7	27.4	23.9	22.4
P	15.3	38.2	39.8	37.7	32.7
-	12.3	34.2	30.5	26.6	25.9
K	10.7	34.7	36.7	35.0	29.3

	-	P
	(±2.53)	
-	22.3	29.5
K	22.6	36.0

Mean D.M. %: 83.5

67/C/3.3

STACKYARD SERIES C (W)

GRAIN

	CA0	CA2	CA4	CA8	Mean
Mean (±1.07)	29.0	33.5	34.7	35.0	33.0
		(±1.52)			(±0.76)
-	23.1	29.4	33.3	32.7	29.6
P	34.9	37.6	36.1	37.4	36.5
-	27.8	32.2	32.5	34.4	31.7
K	30.1	34.8	36.9	35.7	34.4

	-	P
	(±1.07)	
-	28.6	34.9
K	30.6	38.1

Mean D.M. %: 82.4

67/C/4.1

GRASS

(AF)

Levels of N and K - Harwoods Piece 1967, the 10th year.

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 and 66/C/5.

Area of each plot: 0.0087. Area harvested: 0.0059.

Cultivations, etc.: N, P and K fertilisers applied: Mar 10, 1967. Cut four times: May 23, July 7, Sept 4, Oct 26. N and K fertilisers applied after first 3 cuts.

NOTE: Crop samples were taken for N, P and K determinations. Soil samples were taken for pH and available P and K.

Standard errors per plot. Dry matter:

1st cut:	1.96 or 8.4% (33 d.f.)
2nd cut:	2.13 or 12.3% (33 d.f.)
3rd cut:	1.70 or 8.7% (33 d.f.)
4th cut:	1.00 or 17.1% (33 d.f.)
Total of 4 cuts:	3.72 or 5.6% (33 d.f.)

SUMMARY OF RESULTS

DRY MATTER

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
1ST CUT													
	1.6	11.2	12.7	12.8	20.1	23.9 (±0.98)	24.4	27.8	34.5	37.8	36.4	37.3	23.4
2ND CUT													
	7.4	13.6	14.3	12.0	19.9	20.7 (±1.06)	18.7	19.7	19.1	21.7	20.8	20.4	17.4
3RD CUT													
	3.7	12.2	13.8	14.3	19.8	20.4 (±0.85)	22.1	21.9	25.8	27.5	26.5	27.8	19.7

Mean D.M. %: 21.7

Mean D.M. %: 27.8

Mean D.M. %: 26.5

67/C/4.3

DRY MATTER

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

4TH CUT

0.7	3.3	3.3	5.0	6.5	8.2	8.3	3.5	7.2	7.5	7.3	9.5	5.9

(±0.50)

Mean D.M. %: 17.1

TOTAL OF 4 CUTS

13.5	40.3	44.1	44.0	66.2	73.2	73.5	73.0	86.6	94.5	91.0	95.0	66.2

(±1.86)

Mean D.M. %: 23.3

Treatment symbols:

N 0 1 2 3 0.0 0.3 0.6 0.9 cwt N as 'Nitro-Chalk'21 per cut
P 0 1 2 0.0 0.6 1.2 cwt P2O5 as Granular Superphosphate per cut
K 0 1 2 0.0 0.3 0.6 cwt K2O as Granular Muriate of Potash per cut

CEREAL DISEASE REFERENCE PLOTS

(AQ)

Pennells Piece 1967, the fifth year

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

The variety of oats is now Manod, and the variety of beans is now called Tarvin.

Area of each plot: 0.0180. Area harvested: Winter wheat - 0.0115, spring wheat - 0.0116.

Cultivations, etc.: Sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Sept 17, 1966. Ploughed: Oct 20.

Winter wheat: Seed combine drilled at 160 lb: Oct 27, 1966. 'Nitro-Chalk' applied: Mar 20. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 32 gals): Apr 27, 1967. Combine harvested: Aug 30.

Spring wheat: Seed combine drilled at 175 lb: Mar 4, 1967. 'Nitro-Chalk' applied: Mar 20. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 12. Combine harvested: Aug 23.

Oats: Seed combine drilled at 160 lb: Mar 8, 1967. 'Nitro-Chalk' applied: Mar 20. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 12. Combine harvested: Aug 17.

Spring beans: Seed placement drilled at 200 lb: Mar 8, 1967. Sprayed twice with demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals, and by hand at 15 fluid oz in 37 gals): June 13, July 7. Combine harvested: Sept 1.

NOTES: (1) Yields were taken for winter and spring wheat only. (Crop Sequences 2, 3, 4, and 6).

(2) Estimates were made throughout the growing season of the incidence of take-all (Ophiobolus graminis) and eyespot (Cercosporella herpotrichoides).

(3) For previous years' results see 'Results' 63/C/10, 64/C/9, 65/C/9 and 66/C/7.

67/C/5.2

SUMMARY OF RESULTS

GRAIN

Crop					
1963	W	W	Be	W	
1964	W	Be	O	W	
1965	Be	O	W	W	
1966	O	W	W	W	Mean
WINTER WHEAT					
	49.7	45.7	36.6	37.0	42.3
SPRING WHEAT					
	47.9	39.8	36.5	38.4	40.6

Mean D.M. %: Winter wheat: 84.4
Spring wheat: 81.8

67/C/6.1

LUCERNE

(AZ)

Row spacing, N and paraquat, Long Hoos VII, 1967, the 4th year.

For treatments, etc. and the previous years' results see 'Results' 64/C/13, 65/C/12, 66/C/8.

Area of each plot: 0.0145. Area harvested: 0.0034.

Cultivations, etc.: P treatment sprayed with paraquat at 2 lb ion in 37 gals: Feb 6, 1967. Basal PK compound applied: Feb 7. 'Nitro-Chalk' applied: Mar 2. Cut three times: June 2, July 18, Sept 4. Irrigated 2 ins: July 31 - Aug 3. PK applied after first two cuts.

Standard errors per plot. Dry matter:

1st cut:	4.55 or 15.5% (33 d.f.)
2nd cut:	5.70 or 22.7% (33 d.f.)
3rd cut:	2.09 or 13.8% (33 d.f.)
Total of 3 cuts:	11.37 or 16.4% (33 d.f.)

	N cwt per acre as 'Nitro-Chalk'
N0 =	0.00
N1 =	0.25
N2 =	0.50

SUMMARY OF RESULTS

DRY MATTER

1ST CUT

	N0	N1	N2	Mean
Mean (±1.14)	27.0	30.2	30.6	29.3
		(±1.61)		(±0.93)
C	27.2	29.8	29.5	28.9
W	26.7	30.6	31.7	29.7
		(±1.61)		(±0.93)
P0	30.6	34.0	35.8	33.5
P1	23.3	26.4	25.4	25.0

	C	W
	(±1.31)	
P0	33.6	33.3
P1	24.1	26.0

Mean D.M. %: 16.6

67/C/6.3

DRY MATTER

2ND CUT

	N0	N1	N2	Mean
Mean (±1.43)	24.2	26.6	24.6	25.1
		(±2.02)		(±1.16)
C	24.2	25.1	23.5	24.3
W	24.2	28.1	25.7	26.0
		(±2.02)		(±1.16)
P0	24.6	28.0	25.5	26.0
P1	23.8	25.2	23.7	24.2

	C	W
	(±1.65)	
P0	25.6	26.4
P1	22.9	25.6

Mean D.M. %: 18.4

67/C/6.4

DRY MATTER

3RD CUT

	N0	N1	N2	Mean
Mean (±0.52)	15.2	15.4	15.0	15.2
		(±0.74)		(±0.43)
C	15.4	14.9	15.1	15.1
W	15.0	15.8	14.9	15.2
		(±0.74)		(±0.43)
P0	14.9	15.8	15.2	15.3
P1	15.5	14.9	14.8	15.1

	C	W
	(±0.60)	
P0	15.3	15.3
P1	15.0	15.2

Mean D.M. %: 20.8

67/C/6.5

DRY MATTER

TOTAL OF 3 CUTS

	N0	N1	N2	Mean
Mean (±2.84)	66.4	72.2	70.2	69.6
		(±4.02)		(±2.32)
C	66.8	69.9	68.1	68.3
W	65.9	74.5	72.3	70.9
		(±4.02)		(±2.32)
P0	70.1	77.8	76.5	74.8
P1	62.6	66.6	63.9	64.4

	C	W
	(±3.28)	
P0	74.6	75.1
P1	62.0	66.7

Mean D.M. %: 18.6

IRRIGATION

(IR)

The effect of irrigation on barley and spring beans - Great Field I and II, 1967.

Design:
Barley: 2 randomised blocks of 4 whole plots, each split into 4.
Spring beans: Single replicate of 4 x 2 x 2 x 2 x 2, with component of 5 factor interaction confounded and with split plot confounding.

Area of each sub-plot:-

Barley:	0.0400.	Area harvested: 0.0212
Spring beans:	0.0321.	Area harvested: 0.0077

Treatments: Barley: All combinations of:-

Whole plots:	1. Irrigation: None (O), early (A), late (B), full (C).
To 1/4 plots:	2. Varieties: Maris Badger (M), Impala (I).
	3. Nitrogen: 0.3 (N1), 0.6 (N2), as compound fertiliser (basal) plus 'Nitro-Chalk'.

Spring beans: All combinations of:-

Whole plots:	1. Irrigation: None (O), early (A), late (B), full (C).
1/2 plots:	2. Residues of N to barley 1966: 0.5 (R1), 0.8 (R2) cwt N as compound fertiliser (basal) plus 'Nitro-Chalk'.
To 1/4 plots:	3. Row spacing: 10.5 (C), 21 (W) inches.
	4. Seed rate: 200 (L), 300 (H) lb.
1/8th plots:	5. Rates of PK: 400 (F1), 560 (F2) lb compound (0:14:28). 400 lb of these was applied as basal dressing.

Basal applications: Barley: 40 cwt ground chalk, 224 lb (15:15:15) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).
Beans: 40 cwt ground chalk, 400 lb (0:14:28) broadcast by drill. Weedkiller: Simazine at 1 lb a.i. in 32 gals. Insecticide: Demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals also at 12 fluid oz in 3 gals - the second application by fixed-wing aircraft).

Cultivations, etc.:-
Barley: Ground chalk applied: Nov 10, 1966. Ploughed: Nov 11 - 22. Seed drilled at 140 lb: Mar 13, 1967. 'Nitro-Chalk' applied: Mar 21. Weedkiller applied: May 11. Combine harvested:

Aug 22. Previous crops: Spring beans 1965, potatoes 1966.
Spring beans: Ground chalk applied: Nov 10, 1966. Ploughed: Nov 11. Basal PK applied: Mar 18, 1967. PK dressings applied, seed drilled, weedkiller applied: Mar 20. Insecticide applied: June 14 and July 11. Combine harvested: Sept 8. Previous crops: Potatoes 1965, barley 1966.

RAINFALL AND IRRIGATION: INCHES

Week-ending	Rain-fall	IRRIGATION Barley A	Barley B	Barley C	Beans A	Beans B	Beans C
May 6	1.42						
13	0.25						
20	1.08						
27	1.98						
June 3	0.17						
10	0.01						
17	0.00	1.00	-	1.00	1.00	-	1.00
24	0.70	1.30	-	1.30	1.00	-	1.00
July 1	1.33						
8	0.07						
15	0.03	-	1.00	1.00	-	1.00	1.00
22	1.31	-	1.00	1.00	-	1.00	1.00
29	0.62						
Aug 5	0.24						
12	0.27				-	1.00	1.00
19	1.13						
26	0.00						
Sept 2	0.31						
9	0.51						
16	0.26						
23	0.48						
30	0.71						
Total	12.88	2.30	2.00	4.30	2.00	3.00	5.00

Standard errors per plot.
Barley, grain: Sub plot: 2.46 or 6.4% (12 d.f.)
Spring beans, grain: 1/4 plot: 2.59 or 7.0% (8 d.f.)
1/8 plot: 2.19 or 5.9% (10 d.f.)

SUMMARY OF RESULTS

BARLEY

	O	A	B	C	Mean
		GRAIN			
Mean	38.2	41.1	34.8	38.5	38.2
		(±1.23)*			(±0.61)
M	39.8	41.7	34.6	37.6	38.4
I	36.6	40.6	35.1	39.4	37.9
		(±1.23)*			(±0.61)
N1	35.9	39.6	32.3	36.4	36.1
N2	40.5	42.6	37.4	40.6	40.3

* For use in vertical and interaction comparisons only

		STRAW			
Mean	21.1	26.0	19.5	23.1	22.4
M	24.2	28.7	20.3	24.0	24.3
I	17.9	23.3	18.7	22.3	20.6
N1	19.2	25.1	17.7	20.3	20.5
N2	23.0	27.0	21.3	26.0	24.3

Mean D.M. %: Grain: 82.1
Straw: 90.9

67/C/7.4

SPRING BEANS

GRAIN

	O	A	B	C	Mean
Mean	33.1	36.9	38.5	38.6	36.8
R1	34.9	37.1	38.3	37.9	37.1
R2	31.3	36.7	38.7	39.2	36.5
		(±0.91)*			
C	35.5	38.7	40.9	39.8	38.7
W	30.6	35.2	36.1	37.4	34.8
		(±0.91)*			
L	30.6	35.3	36.8	37.5	35.1
H	35.5	38.6	40.2	39.6	38.5
		(1) and (2)			(±0.39)
F1	32.8	36.5	38.6	38.6	36.6
F2	33.3	37.3	38.4	38.5	36.9

(1) (±1.47) For use in horizontal and diagonal comparisons
(2) (±0.77) For use in vertical and interaction comparisons

* For use in vertical and interaction comparisons only

Mean D.M. %: 73.0

67/C/8.1

SOIL STRUCTURE 2

(WEAH)

Effects of peat (annual applications) and subsoiling (1963 only) Woburn Stackyard Field, plot 6 of the Continuous Barley Site, carrots 1967, the fifth year.

Design: 4 randomised blocks of 5 plots with treatments to blocks.

Area of each plot: 0.0016. Area harvested: 0.0010.

Treatments: All combinations of:-

Blocks: 1. Date of preparation of seedbed: Blocks 1 and 2 seedbed worked down Jan 30, 1967 (J). Blocks 3 and 4 seedbed worked down Mar 20, 1967 (M).

Whole plots: 2. Peat: None (O), 62.5 cwt peat dry matter applied to top 2 inches of soil in 1965 only (Sb 65). Cumulative dressings 1963 - 67, 62.5 cwt peat dry matter applied annually to top 2 inches of soil alone (Sb), in addition with peat dug in annually to a depth of 8 inches either at the same rate (Dg1), or at twice the rate (Dg2).

Basal applications: Monoammonium dihydrogen phosphate, potassium nitrate and magnesium sulphate to supply 100 lb N, 75 lb P, 200 lb K and 50 lb Mg. All fertilisers applied to the seedbed before drilling. Weedkiller: Linuron at 0.75 lb in 100 gals. Insecticide: Dimethoate at 0.2 lb in 40 gals, on three occasions.

Cultivations, etc.: Ground chalk applied at 20 cwt, peat applied and all plots dug: Dec 15, 1966. Seedbed fertiliser applied, seed drilled at 6 lb: Mar 20, 1967. Weedkiller applied: Mar 21. Insecticide applied: June 9, June 23, July 10. Lifted: July 24. Variety: Chantenay Red cored, Monarch strain.

NOTES: (1) Crop samples were taken for estimation of dry matter and PK analysis.
(2) For previous years' results see 'Results' 64/C/20, 65/C/19 and 66/C/11.

Standard error per whole plot.
Marketable roots: 0.719 or 5.9% (8 d.f.)

SUMMARY OF RESULTS

	O	Sb65	Sb	Dg1	Dg2	Mean
	MARKETABLE ROOTS					
			(±0.509)*			
J	11.92	12.71	12.56	12.37	12.76	12.46
M	11.87	11.48	11.62	12.25	11.89	11.82
Mean (±0.360)	11.89	12.10	12.09	12.31	12.33	12.14
	TOPS FROM MARKETABLE ROOTS					
J	0.63	0.67	0.78	0.00	0.86	0.59
M	0.51	0.32	0.87	0.43	0.62	0.55
Mean	0.57	0.49	0.82	0.21	0.74	0.57
	TOTAL PRODUCE					
J	28.75	29.10	29.03	28.45	28.87	28.84
M	28.59	27.93	28.41	29.05	28.39	28.47
Mean	28.67	28.51	28.72	28.75	28.63	28.66

* For use in horizontal and interaction comparisons only

PARK GRASS MICROPLOTS

(EPG 81-160)

Plots 5/1 and 5/2, 1967, the third year

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

N is now applied at 30 and 60 lb for each cut taken.

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.: P and K applied: Feb 6, 1967. 'Nitro-Chalk' applied: Mar 10. Cut: May 16, July 3, Sept 6 (plot 5/2 only), Oct 25. 'Nitro-Chalk' applied after the first 2 cuts on plot 5/1 and after the first three cuts on plot 5/2.

Standard errors per plot. Dry matter:

Plot 5/1.	1st cut:	2.09 or 18.2%	(11 d.f.)
	2nd cut:	3.21 or 17.8%	(11 d.f.)
	3rd cut:	3.73 or 18.5%	(11 d.f.)
	Total of 3 cuts:	7.67 or 15.4%	(11 d.f.)
Plot 5/2.	1st cut:	3.81 or 17.3%	(11 d.f.)
	2nd cut:	2.44 or 8.8%	(11 d.f.)
	3rd cut:	2.09 or 10.0%	(11 d.f.)
	4th cut:	1.02 or 13.1%	(11 d.f.)
	Total of 4 cuts:	6.24 or 8.0%	(11 d.f.)

SUMMARY OF RESULTS

PLOT 5/1: DRY MATTER

1ST CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.74)	4.9	13.7	15.7	15.1	12.4
		(±1.48)			(±0.74)
K0	4.0	12.4	13.5	13.5	10.9
K2	6.2	16.1	19.1	14.2	13.9
K4	5.4	15.4	15.8	17.3	13.5
K8	4.0	11.0	14.4	15.4	11.2
		(±1.04)			(±0.52)
N1	5.4	10.7	12.0	12.5	10.1
N2	4.4	16.7	19.4	17.7	14.6

	K0	K2	K4	K8
		(±1.04)		
N1	10.3	11.5	10.0	8.9
N2	11.4	16.3	16.9	13.5

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.48)		(±1.04)
N1	8.2	8.2	8.2
N2	7.9	8.2	8.1
Mean (±1.04)	8.0	8.2	8.1

* Applied 1965

General mean: 11.5

Mean D.M. %: 19.1

67/C/9.3

PLOT 5/1: DRY MATTER

2ND CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±1.13)	14.7	18.8	21.3	22.5	19.3
		(±2.27)			(±1.11)
K0	11.2	14.7	15.6	16.3	14.4
K2	16.8	20.9	22.6	23.0	20.8
K4	15.8	19.4	25.1	24.4	21.2
K8	15.0	20.3	21.9	26.1	20.8
		(±1.60)			(±0.80)
N1	15.3	17.4	18.4	19.0	17.5
N2	14.1	20.3	24.2	25.9	21.1

	K0	K2	K4	K8
		(±1.60)		
N1	14.8	18.4	17.5	19.4
N2	14.1	23.3	24.8	22.3

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±2.39)		(±1.69)
N1	10.7	13.1	11.9
N2	13.0	13.8	13.4
Mean (±1.69)	11.8	13.4	12.6

* Applied 1965

General mean: 18.0

Mean D.M. %: 25.6

67/C/9.4

PLOT 5/1: DRY MATTER

3RD CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±1.32)	21.3	19.9	20.8	22.7	21.2
		(±2.64)			(±1.48)
K0	18.6	16.4	13.8	21.9	17.7
K2	21.8	22.9	23.7	18.6	21.8
K4	24.7	20.8	23.5	24.1	23.3
K8	20.2	19.5	22.5	26.2	22.1
		(±1.86)			(±0.93)
N1	18.4	17.4	19.3	20.0	18.8
N2	24.3	22.4	22.4	25.4	23.6

	K0	K2	K4	K8
		(±1.86)		
N1	14.4	18.9	21.4	20.4
N2	20.9	24.7	25.1	23.8

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.44)		(±1.02)
N1	13.7	15.0	14.3
N2	16.5	20.1	18.3
Mean (±1.02)	15.1	17.5	16.3

* Applied 1965

General mean: 20.2

Mean D.M. %: 25.8

67/C/9.5

PLOT 5/1: DRY MATTER

TOTAL OF 3 CUTS

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±2.71)	41.0	52.5	57.8	60.3	52.9
		(±5.42)			(±2.87)
K0	33.8	43.6	42.9	51.7	43.0
K2	44.8	59.9	65.3	55.8	56.5
K4	45.9	55.7	64.4	65.8	57.9
K8	39.3	50.8	58.7	67.7	54.1
		(±3.84)			(±1.92)
N1	39.1	45.5	49.7	51.5	46.5
N2	42.8	59.4	66.0	69.0	59.3

	K0	K2	K4	K8
		(±3.84)		
N1	39.5	48.7	48.9	48.6
N2	46.4	64.2	67.0	59.6

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±4.49)		(±3.17)
N1	32.5	36.2	34.3
N2	37.4	42.1	39.7
Mean (±3.17)	34.9	39.1	37.0

* Applied 1965

General mean: 49.7

Mean D.M. %: 23.7

PLOT 5/2: DRY MATTER

1ST CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±1.35)	21.7	22.3	23.6	21.7	22.3
		(±2.69)			(±1.35)
K0	16.5	16.4	21.9	22.9	19.4
K2	25.5	24.9	24.4	22.8	24.4
K4	20.9	23.3	29.5	22.4	24.0
K8	24.1	24.6	18.5	18.8	21.5
		(±1.90)			(±0.95)
N1	13.8	12.6	13.0	11.4	12.7
N2	29.6	32.0	34.2	32.1	32.0

	K1	K2	K4	K8
		(±1.90)		
N1	11.3	14.9	13.4	11.2
N2	27.5	34.0	34.7	31.8

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±2.69)		(±1.90)
N1	14.3	14.5	14.4
N2	27.0	27.4	27.2
Mean (±1.90)	20.7	21.0	20.8

* Applied 1965

General mean: 22.0

Mean D.M. %: 17.6

67/C/9.7

PLOT 5/2: DRY MATTER

2ND CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.86)	28.3	25.9	28.4	26.3	27.2
		(±1.73)			(±0.85)
K0	27.2	26.3	29.8	27.5	27.7
K2	26.5	23.9	29.0	28.5	27.0
K4	30.8	27.6	27.8	23.9	27.5
K8	28.6	25.8	26.9	25.3	26.6
		(±1.22)			(±0.61)
N1	25.6	22.0	24.9	21.5	23.5
N2	30.9	29.8	31.8	31.1	30.9

	K0	K2	K4	K8
		(±1.22)		
N1	23.2	24.6	24.4	21.9
N2	32.2	29.3	30.7	31.4

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.80)		(±1.27)
N1	24.7	26.1	25.4
N2	31.7	35.7	33.7
Mean (±1.27)	28.2	30.9	29.6

* Applied 1965

General mean: 27.7

Mean D.M. %: 23.8

67/C/9.8

PLOT 5/2: DRY MATTER

3RD CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.74)	21.4	19.5	21.9	21.3	21.0
		(±1.48)			(±0.81)
K0	20.5	20.2	22.3	21.7	21.2
K2	21.8	19.6	23.0	21.6	21.5
K4	19.7	18.4	22.6	21.5	20.6
K8	23.6	19.7	20.0	20.2	20.9
		(±1.04)			(±0.52)
N1	18.2	15.8	17.5	15.6	16.8
N2	24.6	23.1	26.4	26.9	25.2

	K0	K2	K4	K8
		(±1.04)		
N1	17.3	18.3	15.9	15.7
N2	25.0	24.7	25.3	26.0

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±1.04)		(±0.74)
N1	17.4	19.0	18.2
N2	23.2	21.7	22.4
Mean (±0.74)	20.3	20.4	20.3

* Applied 1965

General mean: 20.9

Mean D.M. %: 18.0

67/C/9.9

PLOT 5/2: DRY MATTER

4TH CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.36)	8.2	8.3	7.8	7.9	8.1
		(±0.72)			(±0.40)
K0	9.3	7.8	7.7	7.2	8.0
K2	7.9	8.5	8.1	7.2	7.9
K4	7.4	8.6	8.0	7.6	7.9
K8	8.4	8.5	7.6	9.4	8.5
		(±0.51)			(±0.26)
N1	7.8	7.8	7.9	7.5	7.8
N2	8.6	8.9	7.8	8.3	8.4

	K0	K2	K4	K8
		(±0.51)		
N1	7.9	7.5	7.6	8.0
N2	8.1	8.3	8.2	9.0

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±0.40)		(±0.28)
N1	6.6	6.6	6.6
N2	6.7	8.2	7.4
Mean (±0.28)	6.6	7.4	7.0

* Applied 1965

General mean: 7.8

Mean D.M. %: 15.9

67/C/9.10

PLOT 5/2: DRY MATTER

TOTAL OF 4 CUTS

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±2.21)	79.6	76.0	81.7	77.1	78.6
		(±4.41)			(±2.32)
K0	73.5	70.6	81.6	79.4	76.2
K2	81.6	77.0	84.5	80.1	80.8
K4	78.8	77.9	87.9	75.4	80.0
K8	84.5	78.6	72.9	73.7	77.4
		(±3.12)			(±1.56)
N1	65.5	58.2	63.3	56.0	60.7
N2	93.7	93.9	100.1	98.3	96.5

	K0	K2	K4	K8
		(±3.12)		
N1	59.8	65.3	61.2	56.7
N2	92.7	96.3	98.8	98.2

K1 and K6 plots

	K1P2*	K6P2*	Mean
	(±3.78)		(±2.67)
N1	63.0	66.3	64.7
N2	88.6	93.0	90.8
Mean (±2.67)	75.8	79.6	77.7

* Applied 1965

General mean: 78.4

Mean D.M. %: 18.8

PARK GRASS MICROPLOTS

(EPG 41-80)

Plot 6, 1967, the third year

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

The N rates are now applied in 6 equal dressings to treatment C3 as well as to treatment C6. The total rates remain the same.

Cultivations, etc.: P, K, Na and Mg fertilisers applied: Feb 6, 1967. 'Nitro-Chalk' applied: Mar 10. Mecoprop treatment applied at 45 oz a.e. in 50 gals: Apr 24. C6 plots cut: May 5 and 26, June 27, Aug 3, Sept 6, Oct 25. 'Nitro-Chalk' applied after each cut except the last. C3 plots cut: May 16, July 11, Oct 25. 'Nitro-Chalk' applied on May 5, May 26 and Aug 4 and after each cut except the last.

Standard error per plot.
Dry matter, total of all cuts: 5.14 or 7.2% (27 d.f.)

SUMMARY OF RESULTS

DRY MATTER: TOTAL OF ALL CUTS

	N0	SN0	N1	N2	N3	Mean
			(±2.57)			(±1.15)
C3	68.5	34.5	75.6	100.6	106.3	77.1
C6	51.7	24.0	62.2	90.5	102.8	66.2
Mean (±1.82)	60.1	29.2	68.9	95.6	104.5	71.7

Mean D.M. %: 3 cut plots: 20.7
6 cut plots: 20.7

67/C/11.1

WINTER WHEAT

(BH)

Sod seeding and pests, New Zealand 1967, the third year.

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

Area of each sub plot: 0.0226. Area harvested: 0.0152.

Treatments: All combinations of:-

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

Sub plots: 2. Insecticide spray: None (O), sprayed with DDT,*** diazinon*** and chlordane*** (D).

* At 4 lb in 40 gals (with ammonium thiocyanate at 3.7 lb).
** At 2 lb ion in 40 gals.
*** A mixture of DDT at 9.6 lb, diazinon at 4.8 lb and chlordane at 9.6 lb, in 160 gals.

Basal applications: 24 cwt ground chalk, 340 lb (6:15:15), 450 lb 'Nitro-Chalk' in spring. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 20 gals).

Cultivations, etc.: M and MI plots ploughed: Sept 15, 1966. Aminotriazole and ammonium thiocyanate applied: Sept 16. Ground chalk applied: Sept 23. Insecticides and paraquat applied: Oct 21. Basal NPK compound applied: Oct 24. Spring-tine cultivated M and MI treatments: Oct 25. Seed drilled at 180 lb: Oct 26. Basal 'Nitro-Chalk' applied: Apr 18, 1967. Weedkiller applied: May 9. Combine harvested: Aug 30. Variety: Cappelle.

NOTES: (1) Counts of soil fauna were made in June, August and September. Earthworm counts were included in September.
(2) For previous years' results see 'Results' 65/C/24 and 66/C/15.

Standard errors per plot. Grain:
Whole plot: 2.32 or 6.4% (4 d.f.)
Sub plot: 2.15 or 6.0% (6 d.f.)

SUMMARY OF RESULTS

GRAIN

	M	MI	P	Mean
		(1) and (2)		(±0.72)
O	42.4	42.4	24.9	36.6
D	39.0	42.6	25.1	35.6
Mean (±1.34)	40.7	42.5	25.0	36.1

Mean D.M. %: 83.8

(1) (±1.60) For use in horizonal and diagonal comparisons
(2) (±1.24) For use in vertical and interaction comparisons

67/C/12.1

INTENSIVE WINTER BARLEY GROWING EXPERIMENT

(BJ)

Hoosfield (Old Four Course) 1967 - the third year

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

Area of each plot: 0.0386. Area harvested: 0.0254.

Basal applications: Basal fertiliser as previously. 23 cwt ground chalk. Weedkiller to barley and oats: Ioxynil/mecoprop (Actril C at 6 pints in 20 gals). Insecticide to beans: Demeton-s-methyl (Metasystox at 15 fluid oz in 37 gals) by hand on 2 occasions.

Cultivations, etc.: Ground chalk applied: Sept 22, 1966. Ploughed: Oct 17.
Barley: Seed drilled at 140 lb: Oct 28. 'Nitro-Chalk' applied: Apr 7, 1967. Weedkiller applied: May 9. Combine harvested: Aug 7.
Oats: Seed drilled at 145 lb: Oct 29, 1966. 'Nitro-Chalk' applied: Apr 7, 1967. Weedkiller applied: May 9. Combine harvested: Aug 7. Variety: Peniarth.
Winter beans: Seed drilled at 300 lb: Oct 29, 1966. Insecticide applied: June 27 and July 7, 1967. Combine harvested: Sept 9. Variety: Pedigree.

NOTES: (1) Yields were taken from sequences 1, 3 (Barley) and 4 (Oats) only.
(2) Estimates of Eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in spring and summer.

Standard errors per plot. Grain:
Barley Sequences 1 and 3: 2.82 or 11.4% (10 d.f.)
Oats Sequence 4: 1.38 or 4.2% (4 d.f.)

SUMMARY OF RESULTS

BARLEY (1 and 3) GRAIN

Crop in 1965	Crop in 1966	N0	N1	N2	N3	Mean N1 N2
			(±1.63)			(±1.15)
B	B (1)		18.1	27.7	28.6	22.9
B	Be (3)	20.2	28.2	26.2		27.2

General mean: 24.8
Mean D.M. %: 83.9

OATS (4) GRAIN

N1	N2	N3	Mean
28.3	34.5 (±0.80)	36.5	33.1

Mean D.M. %: 83.0

67/C/13.1

LEGUMES AND BARLEY

(BP)

Effects of crop sequences and green manures - Stackyard 1967, the third year - barley.

Design: 2 randomised blocks of 10 plots, plots being split into 4 for N.

Area of each sub plot: 0.0101. Area harvested: 0.0062.

Treatments: All combinations of:-

Whole plots:

1. Crop sequences (C):

	1	2	3	4	5	6	7	8	9	10
1965	B	B	B	B	B	B	B	B	B	B
Undersown	Cl	T	T	-	-	-	-	-	T	T
1966	H	B	O	B	O	B	O	Be	B	O
Undersown	-	T	T	T	T	-	-	-	-	-
1967	B	B	B	B	B	B	B	B	B	B

Half plots:

2. Nitrogen (applied 1965 and 1966): 0.4 (R1), 0.8 (R2) cwt N as 'Nitro-Chalk' in seedbed (none to beans and hay).

Quarter plots:

3. Nitrogen to barley 1967: None (N0), 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N as 'Nitro-Chalk' in seedbed.

B = barley, H = hay, O = oats, Be = spring beans, Cl = red clover, T = trefoil.

Basal applications: 280 lb (0:20:20) combine drilled: Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).

Cultivations, etc.: Hay plots ploughed: Sept 15, 1966. Corrective K applied to hay plots at 1.0 cwt K2O as muriate of potash: Oct 4. Ploughed: Jan 13, 1967. Seed drilled at 140 lb: Mar 17. 'Nitro-Chalk' applied: Mar 23. Sprayed: May 11. Combine harvested: Aug 21. Variety: Maris Badger.

NOTE: For previous years' results see 'Results' 65/C/26 and 66/C/17.

67/C/13.2

Standard errors per plot. Grain

Crop Sequences 2 3 4 5 6 7 9 10
Whole plot: 9.75 or 38.2% (6 d.f.)
1/4 plot: 4.57 or 17.9% (14 d.f.)

Crop Sequences 1 and 8
1/4 plot: 3.11 or 9.7% (6 d.f.)

67/C/13.3

SUMMARY OF RESULTS

GRAIN

Crop Sequences 2 3 4 5 6 7 9 10

	R1	R2	N0	N1	N2	N3	Mean
				(1) and (2)			(±4.88)
C2	18.5	19.9	16.1	19.0	20.0	21.8	19.2
C3	34.8	26.1	18.4	27.9	31.4	44.1	30.4
C4	24.2	23.4	10.1	25.1	28.3	31.7	23.8
C5	33.2	27.2	18.7	28.8	38.8	34.5	30.2
C6	23.2	19.6	14.2	16.1	20.8	34.4	21.4
C7	29.7	30.6	17.1	33.5	32.7	37.2	30.2
C9	21.3	15.2	9.2	17.4	22.5	24.1	18.3
C10	30.5	31.4	19.5	23.9	41.0	39.4	30.9
Mean	26.9	24.2	15.4	24.0	29.4	33.4	25.5
				(±1.14)			

Mean D.M. %: 81.1

Crop Sequences 1 and 8

				(3) and (4)			(±2.38)
C1			31.4	36.3	41.0	38.7	36.9
C8			21.2	17.5	32.1	38.1	27.2
Mean			26.3	26.9	36.5	38.4	32.0
				(±1.56)			

Mean D.M. %: 79.9

(1) (±5.62) (3) (±3.05) For use in vertical and diagonal comparisons
(2) (±3.23) (4) (±2.20) For use in horizontal and interaction comparisons

67/C/14.1

PREVIOUS CROPS X N FOR BARLEY

(BQ)

The effect of previous cropping and nitrogen on the yield of barley - Stackyard 1967, the third year - barley.

Design: A single replicate of 3 x 3 x 3 x 3 in 3 blocks of 9 plots, each split into 3 for N in 1966 and 1967.

Area of each sub plot: 0.0096. Area harvested: 0.0064.

Treatments: All combinations of:-

Whole plots (applied 1965):-

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 1966 and 1967):-

3. 1966 Nitrogen: None (R0), 0.5 (R1), 1.0 (R2) N as 'Nitro-Chalk'.
4. 1967 Nitrogen: None (N0), 0.5 (N1), 1.0 (N2) N as 'Nitro-Chalk'.

Basal applications: 2.5 cwt (0:20:20) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).

Cultivations, etc.: Ploughed twice: Sept 15, 1966 and Jan 3, 1967. Seed drilled at 165 lb: Mar 13. 'Nitro-Chalk' applied: Mar 13. Sprayed: May 11. Combine harvested: Aug 21. Variety: Maris Badger.

NOTE: For previous years' results see 'Results' 65/C/27, 66/C/18.

Standard errors per plot. Grain:

Whole plot: 2.79 or 8.7% (16 d.f.)
Sub plot: 3.44 or 10.8% (40 d.f.)

SUMMARY OF RESULTS

GRAIN

Crop in 1965	N 1965 Q0	Q2	Q4	R0	R1	R2	N0	N1	N2	Mean
	(±1.61)			(1) and (2)			(1) and (2)			(±0.93)
W	31.2	28.8	32.1	30.4	29.9	31.8	17.5	33.1	41.5	30.7
K	30.1	30.7	29.2	30.0	28.8	31.1	14.7	32.4	42.8	30.0
G	33.2	35.5	36.9	35.2	35.2	35.1	20.4	40.1	45.1	35.2
				(1) and (2)			(1) and (2)			
		Q0		32.4	30.1	31.9	16.2	34.7	43.6	31.5
		Q2		30.6	32.1	32.3	17.7	34.5	42.9	31.7
		Q4		32.7	31.6	33.9	18.7	36.5	42.9	32.7
								(±1.15)		(±0.66)
					R0		17.6	34.0	44.1	31.9
					R1		17.7	33.8	42.4	31.3
					R2		17.3	37.9	42.8	32.7
Mean (±0.66)							17.5	35.2	43.1	32.0

(1) (±1.32) For use in vertical and diagonal comparisons
(2) (±1.15) For use in horizontal and interaction comparisons

Mean D.M. %: 82.1

67/C/15.1

PREVIOUS CROPS & N FOR BARLEY 1966 - 67

(BY)

The effect of previous cropping and nitrogen on the yield of barley - Fosters Corner 1967, the second year - barley.

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

Area of each sub plot: 0.0107. Area harvested: 0.0067.

Treatments: All combinations of:-
Whole plots (applied 1966):-
1. Cropping: Spring wheat (W), Kale (K), Italian Ryegrass (G).
2. Nitrogen: None (R0), 1.0 (R2), 2.0 (R4) cwt N as 'Nitro-Chalk'.

Sub plots (applied to barley 1967):-
3. Nitrogen: None (N0), 0.5 (N1), 1.0 (N2) as 'Nitro-Chalk'.

Basal applications: 2.5 cwt (0:20:20) combine drilled. Weedkiller: Mecoprop at 1.5 a.e. in 20 gals.

Cultivations, etc.: Ploughed: Nov 25, 1966. Seed drilled at 145 lb, 'Nitro-Chalk' applied: Mar 6, 1967. Sprayed: May 16. Combine harvested: Aug 21. Variety: Maris Badger.

NOTE: For previous year's results see 'Results' 66/C/19.

Standard errors per plot. Grain:
Whole plot: 0.95 or 2.6% (16 d.f.)
Sub plot: 2.06 or 5.5% (36 d.f.)

SUMMARY OF RESULTS

GRAIN

	R0	R2	R4	Mean
		(±0.55)		(±0.32)
W	38.6	37.7	39.4	38.6
K	40.8	40.7	40.1	40.5
G	30.3	33.3	34.3	32.6
Mean (±0.32)	36.6	37.3	38.0	37.3

	N0	N1	N2
		(1) and (2)	
W	36.6	40.3	38.9
K	37.0	43.5	41.1
G	22.6	36.8	38.4
Mean (±0.40)	32.1	40.2	39.5
		(1) and (2)	
R0	29.5	39.8	40.5
R2	31.3	40.7	39.8
R4	35.5	40.1	38.2

(1) (±0.64) For use in vertical and diagonal comparisons
(2) (±0.69) For use in horizontal and interaction comparisons

67/C/15.3

GRAIN

	W			K			G		
	N0	N1	N2	N0	N1	N2	N0	N1	N2
				(1) and (2)					
R0	34.0	40.9	41.0	34.3	44.3	43.7	20.1	34.1	36.7
R2	34.5	40.4	38.2	37.1	44.4	40.6	22.1	37.3	40.6
R4	41.2	39.6	37.6	39.6	41.7	39.1	25.7	39.1	38.0

(1) (±1.12) For use in comparisons involving different C & R

(2) (±1.19) For use in comparisons within the same C & R

Mean D.M. %: 83.9

67/C/16.1

RYEGRASS AFTER BARLEY

(EQ)

The rate of action of P fertilisers, Sawyers II 1967, the third year.

Design: 4 replicates of 7 x 2 x 2 plus 2 plots per block without P, in 8 blocks of 16 plots.

Area of each plot: 0.0018. Area harvested: 0.0009.

Treatments 1965 and 1966: No P (O) (2 plots per block) and all combinations of:-

1. Phosphatic fertilisers:

Triple superphosphate	(S)
Potassium metaphosphate	(K)
Triple superphosphate plus potassium metaphosphate*	(SK)
Magnesium ammonium phosphate	(M)
Triple superphosphate plus magnesium ammonium phosphate*	(SM)
Potassium metaphosphate plus magnesium ammonium phosphate*	(KM)
Triple superphosphate plus potassium metaphosphate plus magnesium ammonium phosphate*	(SKM)

* Each material supplying half the P (one third in treatment SKM).

2. Levels of P: 12 lb (L1), 24 lb (L2) P to barley 1966 (double these rates to potatoes 1965).
3. Type of fertiliser: Powder, less than 1 mm (P), granular 1-4 mm (G).

All applied to barley 1966 with 'Nitro-Chalk', muriate of potash and kieserite in amounts adjusted to give a total of 60 lb N, 100 lb K and 25 lb Mg.

Basal applications: To ryegrass: 60 lb N and 50 lb K (16:0:16) for each cut.

Cultivations etc.: Basal NK applied: Feb 24, 1967. Cut once: May 17.

NOTE: For previous years' results see 'Results' 65/C/28 and 66/C/20.

Standard error per plot.
Dry matter: 2.84 or 5.8% (90 d.f.)

67/C/16.2

SUMMARY OF RESULTS

1ST AND ONLY CUT: DRY MATTER

	O	S	K	SK	M	SM	KM	SKM	Mean
Mean (±0.71)	45.8	48.8	51.6	49.9	48.8	49.4	50.3	50.4	49.4
				(±1.01)					(±0.38)
L1		49.2	50.0	47.6	48.5	49.5	50.2	46.7	48.8
L2		48.4	53.1	52.2	49.0	49.3	50.4	54.2	50.9
P		48.0	49.6	50.4	48.5	48.7	51.2	48.5	49.3
G		49.6	53.6	49.3	49.0	50.2	49.4	52.4	50.5

Mean D.M. %: 18.4

67/C/17.1

BARLEY FOLLOWED BY RYEGRASS

(ER)

The rate of action of P fertilisers, Delharding, 1967, the second year.

Design: 3 replicates of 7 x 2 x 2 plus 2 plots per block without P, in 6 blocks of 16 plots.

Area of each plot:		Area harvested:
Barley:	0.0018	0.0009
Ryegrass:	0.0018	0.0006

Treatments 1966 and 1967: No P (O) (2 plots per block) and all combinations of:-

1. Phosphatic fertilisers:
   - Triple superphosphate (S)
   - Potassium metaphosphate (K)
   - Triple superphosphate plus potassium metaphosphate* (SK)
   - Magnesium ammonium phosphate (M)
   - Triple superphosphate plus magnesium ammonium phosphate* (SM)
   - Potassium metaphosphate plus magnesium ammonium phosphate* (KM)
   - Triple superphosphate plus potassium metaphosphate plus magnesium ammonium phosphate* (SKM)

* Each material supplying half the P (one third in treatment SKM).

2. Levels of P: 12 lb (L1), 24 lb (L2) P to barley (double these rates to potatoes 1966).
3. Type of fertiliser: Powder, less than 1 mm (P), granular 1-4 mm (G).

All applied to barley with 'Nitro-Chalk', muriate of potash and kieserite in amounts adjusted to give a total of 60 lb N, 100 lb K and 25 lb Mg.

Basal applications: To barley: 60 lb N and 50 lb K (16:0:16). To ryegrass: 90 lb N as 'Nitro-Chalk'. Weedkillers: To barley: Dichlorprop/MCPA (Cornox RK Extra at 7 pints in 50 gals), paraquat to stubble at 1 lb ion in 40 gals.

Cultivations, etc.:

Barley: Ploughed: Sept 30, 1966. Fertilisers applied, seed drilled at 160 lb: Mar 15, 1967. Weedkiller applied: May 12. Basal NK applied: May 31. Harvested green: June 30. Paraquat applied: July 4. Variety: Maris Badger.

Ryegrass: Basal N applied, seed drilled at 60 lb: July 25, 1967.
Cut: Oct 19. Variety: Italian S22.

NOTE: For previous years' results see 'Results' 66/C/21.

Standard errors per plot. Dry matter:
Barley, green crop: 3.20 or 18.9% (60 d.f.)
Ryegrass, 1st and only cut: 1.89 or 8.9% (60 d.f.)

SUMMARY OF RESULTS

BARLEY GREENCROP. DRY MATTER. CWT PER ACRE

	O	S	K	SK	M	SM	KM	SKM	Mean
Mean (±0.93)	6.3	17.7	17.8	20.1	16.7	19.7	17.1	20.2	17.0
					(±1.31)				(±0.43)
L1		16.8	14.8	17.3	13.1	16.7	13.6	16.1	15.5
L2		18.6	20.8	22.9	20.3	22.8	20.7	24.3	21.5
P		16.8	18.5	19.0	17.5	19.5	18.2	20.2	18.5
G		18.6	17.2	21.2	16.0	19.9	16.1	20.1	18.4

Mean D.M. %: 30.0

RYEGRASS 1ST AND ONLY CUT. DRY MATTER.

	O	S	K	SK	M	SM	KM	SKM	Mean
Mean (±0.54)	14.4	21.6	22.6	23.2	21.8	22.9	21.5	22.0	21.3
					(±0.77)				(±0.25)
L1		19.1	20.2	21.5	20.4	21.5	19.5	19.8	20.3
L2		24.2	25.0	25.0	23.1	24.3	23.5	24.1	24.2
P		20.6	22.1	23.4	20.6	23.4	21.8	22.1	22.0
G		22.7	23.0	23.0	23.0	22.4	21.3	21.9	22.5

Mean D.M. %: 11.4

67/C/18.1

WINTER WHEAT

(EBR, EBS)

Effects of formalin and nitrogen, Pastures (pathogen free 1965), and Little Knott I (pathogen infected 1965) 1967, the third year.

Design (each field) 4 x 2 x 2 x 2 x 2 (half 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: 0.0024.
Pastures (sub plot): 0.0016. Area harvested: 0.0008.

Treatments:
All combinations of:-
Whole plots: (Pastures)
1. N: None (N0), 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt as 'Nitro-Chalk' applied in 1965, 1966 and 1967.
2. Formalin (applied 1965): None (65O), sprayed with a 38% solution of formaldehyde at 266 gals in 3700 gals (65F).

Sub plots: (Pastures)
3. Formalin as 1965, applied 1966: (66O) and (66F).
4. Formalin as 1966, applied in 5800 gals in 1967: (67O) and (67F).
5. Time of application (1967): To wheat stubble (E), after cultivations (L).

Basal applications: 560 lb (0:20:20) broadcast by hand (both fields).
Little Knott I: 20 cwt ground chalk. Weedkiller (both fields): Dichlorprop/MCPA (Cornox RK Extra at 6 pints in 40 gals).

Cultivations, etc.:-
Pastures: Formalin applied to FE plots: Sept 9, 1966. Ploughed: Sept 27. Formalin applied to FL plots, basal PK fertiliser applied: Sept 29. Plots rotary cultivated, seed drilled at 180 lb: Oct 25. 'Nitro-Chalk' applied (1st half dressing): Mar 14, 1967. Weedkiller applied: Apr 17. 'Nitro-Chalk' applied (2nd half dressing): Apr 18. Harvested: Aug 18. Variety: Cappelle.

Little Knott I: Formalin applied to FE plots: Sept 9, 1966. Ground chalk applied: Sept 16. Ploughed: Sept 27. Formalin applied to FL plots, basal PK fertiliser applied: Sept 29. Plots rotary cultivated seed drilled at 180 lb: Oct 25. 'Nitro-Chalk' applied (1st half dressing): Mar 14, 1967. Weedkiller applied: Apr 17. 'Nitro-Chalk' applied (2nd half dressing): Apr 18. Harvested: Aug 18. Variety: Cappelle.

Notes: (1) Samples of grain and straw were taken at harvest for determination of N percentage.
(2) For previous years' results see 'Results' 65/C/29 and 66/C/22.

67/C/18.3

SUMMARY OF RESULTS

PASTURES

	N0	N1	N2	N3	Mean
		GRAIN			
Mean	26.1	31.8	30.9	31.1	30.0
65O	26.3	32.7	33.5	29.2	30.4
65F	26.0	31.0	28.3	33.0	29.6
66O	27.3	36.6	29.8	32.6	31.6
66F	25.0	27.1	32.0	29.5	28.4
67O	20.4	28.5	33.9	33.6	30.4
67FE	27.7	35.6	29.8	35.2	29.7
67FL	36.1	34.7	26.0	21.9	29.5
		STRAW			
Mean	43.4	62.7	68.2	75.7	62.5
65O	43.6	65.0	67.7	73.8	62.6
65F	43.1	60.5	68.7	77.5	62.4
66O	46.8	69.0	68.7	80.1	66.2
66F	40.0	56.5	67.7	71.2	58.8
67O	35.6	57.3	66.9	71.5	57.8
67FE	44.8	67.4	63.8	80.7	64.2
67FL	57.6	68.9	75.3	78.9	70.1

Mean D.M. %: Grain: 78.5
Straw: 73.4

67/C/18.4

LITTLE KNOTT I

	N0	N1	N2	N3	Mean
		GRAIN			
Mean	14.9	24.5	28.0	28.2	23.9
650	14.1	23.9	28.6	27.7	23.6
65F	15.6	25.1	27.5	28.5	24.2
660	22.9	30.2	32.3	34.8	30.0
66F	6.9	18.7	23.8	21.5	17.7
670	13.0	21.6	30.1	27.8	23.1
67FE	17.1	25.7	22.8	24.8	22.6
67FL	16.5	29.0	29.0	32.3	26.7
		STRAW			
Mean	20.7	39.3	42.1	46.1	37.0
650	19.5	39.3	39.6	44.3	35.7
65F	21.9	39.3	44.5	47.9	38.4
660	24.8	44.0	45.6	51.6	41.5
66F	16.6	34.6	38.6	40.6	32.6
670	17.9	35.4	43.0	39.7	34.0
67FE	22.2	45.1	38.4	54.5	40.1
67FL	24.9	41.3	43.8	50.6	40.1

Mean D.M. %: Grain: 81.7
Straw: 73.6

67/C/19.1

COMPARISON OF FUMIGANTS

(WEBO)

Nitrogen and fumigants - Woburn Butt Close, barley 1967, the third year.

Design: 4 randomised blocks of 16 plots split into two for effects of fumigants.

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

Treatments: All combinations of:-

Whole plots:

1. Nitrogen: 0.4 (N1), 1.2 (N3) cwt N as 'Nitro-Chalk', cumulative on N1 and N3 treatments to spring wheat 1966.
2. Fumigants etc. in 1965 and 1966: None. (O)
   None, plots rotary cultivated. (OR)
   Methyl bromide applied under gas tight sheets at 436 lb. (MB)
   Dichloropropane-dichloropropene at 800 lb injected at 12 inch spacing. (DD)
   Chloropicrin at 400 lb injected at 12 inch spacing. (CH)
   Dazomet at 400 lb rotary cultivated in. (DA)
   Formalin as drench at 200 gals formaldehyde in 40% solution. (FO)
   Calomel dust 4% mercurous chloride at 5 lb Hg rotary cultivated in. (ME)

Sub plots:

Fumigants etc. applied in 1965 only (R).
In 1965 and 1966 (C).

Basal applications: 2 cwt (0:20:20) combine drilled. Weedkiller: 4 lb amino-triazole plus 3.7 lb ammonium thiocyanate in 33 gals.

Cultivations, etc.: Weedkiller applied: Sept 27, 1966. Ground chalk applied at 20 cwt: Oct 31. Ploughed: Nov 2. Seed combine drilled at 140 lb: Mar 6. 'Nitro-Chalk' applied: Mar 8. Harvested: 8 - 10 Aug. Variety: Maris Badger.

NOTES: (1) Samples were taken of tops for plant growth and roots for counts of nematode larvae during the season.
(2) Samples were also taken in October for nematode counts.
(3) For previous years' results see 'Results' 65/C/31 and 66/C/24.

Standard errors per plot. Grain:
Whole plot: 4.46 or 16.6% (45 d.f.)
Sub plot: 3.53 or 13.1% (48 d.f.)

67/C/19.3

SUMMARY OF RESULTS

GRAIN

	O	OR	MB	DD	CH	DA	FO	ME	Mean
Mean (±1.58)	23.4	25.8	32.1	32.0	29.4	29.4	19.2	23.8	26.9
				(±2.23)					(±0.79)
N1	18.2	19.3	25.0	26.6	22.7	22.3	10.9	16.8	20.2
N3	28.6	32.3	39.3	37.5	36.0	36.5	27.5	30.9	33.6
				(1) and (2)					(±0.47)
R		26.6	34.1	31.7	27.7	28.4	18.9	25.1	27.5
C		25.1	30.1	32.4	31.0	30.4	19.6	22.6	27.3

(1) (±1.81) For use in horizontal and diagonal comparisons
(2) (±1.25) For use in vertical and interaction comparions

Mean D.M. %: 80.9

67/C/20.1

LUCERNE

(BZ)

Virus control - Long Hoos 1967, the second year. For treatments etc. and the previous years' results see 'Results' 66/C/26.

Area harvested: 0.0046.

The initial nitrogen dressing to M plots is now 0.8 cwt N.

Basal application: 0.9 cwt P_2O_5, 1.8 cwt K_2O as (0:14:28) in winter.

Cultivations, etc.: Basal PK compound applied: Feb 7, 1967. 'Nitro-Chalk' applied to M plots: Mar 16. S plots sprayed with demeton-s-methyl: Apr 26, June 27, Aug 3, Oct 12. Irrigated 2 ins: July 31 - Aug 3. Cut three times: June 1, July 18, Sept 5. Muriate of potash applied to L plots and NK compound to M plots after each cut.

NOTES: (1) Aphid counts were made and the incidence of lucerne mosaic virus and of bean leaf roll virus were estimated.
(2) All plots were affected by drift during aerial spraying of field beans with demeton-s-methyl on July 11.
(3) In order to avoid removing the eggs of over-wintering aphids, no fourth cut was taken.

Standard errors per plot. Grass, dry matter:

1st cut:	3.70	or 8.0% (6 d.f.)
2nd cut:	2.71	or 6.6% (6 d.f.)
3rd cut:	2.78	or 10.1% (6 d.f.)
Total of 3 cuts:	3.88	or 3.4% (6 d.f.)

67/C/20.2

SUMMARY OF RESULTS

DRY MATTER

	O	S	Mean
	1ST CUT		
	(±1.85)		(±1.31)
L	41.0	39.8	40.4
M	54.4	48.5	51.5
Mean (±1.31)	47.7	44.2	46.0
	2ND CUT		
	(±1.35)		(±0.96)
L	45.1	42.2	43.6
M	36.7	39.3	38.0
Mean (±0.96)	40.9	40.7	40.8

Mean D.M. %: 1st cut: 16.6
2nd cut: 18.0

67/C/20.3

DRY MATTER

	O	S	Mean
	3RD CUT		
	(±1.39)		(±0.98)
L	26.0	25.3	25.7
M	29.1	29.0	29.0
Mean (±0.98)	27.6	27.1	27.4

	TOTAL OF 3 CUTS		
	(±1.94)		(±1.37)
L	112.2	107.3	109.8
M	120.2	116.7	118.5
Mean (±1.37)	116.2	112.0	114.1

Mean D.M. %: 3rd cut: 17.7
Total of 3 cuts: 17.4

67/C/21.1

LEVELS AND FORMS OF N FOR BEANS

(CA/W)

Levels and forms of N for beans followed by wheat, Great Knott II 1967, the second year - winter wheat.

Design: 3 x 3 x 3 in 3 blocks of 9 plots, plus 3 extra plots per block.

Area of each plot: 0.0193. Area harvested: 0.0129.

Treatments: All combinations of:-

1. Nitrogen to winter wheat 1967: None (N0), 0.5 (N1), 1.0 (N2) cwt N as 'Nitro-Chalk'.

Treatments to beans 1966:-

2. Forms of nitrogen: Ammonium nitrate (A), nitrate of soda (N), sulphate of ammonia (S).
3. Levels of N: None (R0), 1 (R1), 2 (R2), 3 (R3) cwt N broadcast.

Additional plots: To wheat 1967 N0, N1 and N2 as above to plots receiving no nitrogen in 1966.

Basal applications: 340 lb (0:14:28) combine drilled. Weedkiller: Dicamba at 1.28 oz and MCPA at 1.13 lb a.e. in 32 gals.

Cultivations, etc.: Ploughed: Sept 29, 1966. Seed drilled at 180 lb: Oct 29. 'Nitro-Chalk' applied: Apr 17, 1967. Sprayed: Apr 29. Combine harvested: Aug 30. Variety: Cappelle. Previous crops: Barley 1965, spring beans 1966.

NOTE: For the previous year's results see 'Results' 66/C/28.

Standard error per plot.
Grain: 4.24 or 8.0% (9 d.f.)

SUMMARY OF RESULTS

GRAIN

	A	N	S	R1	R2	R3	Mean
		(±2.45)			(±2.45)		(±1.41)
N0	47.7	46.4	44.3	38.6	47.1	52.7	46.1
N1	53.4	54.8	57.2	55.4	54.5	55.5	55.1
N2	56.5	57.7	56.1	60.0	57.8	52.5	56.8
					(±2.45)		
		A		53.1	51.4	53.1	52.5
		N		51.5	54.4	52.9	53.0
		S		49.4	53.6	54.7	52.5
Mean (±1.41)				51.3	53.1	53.6	52.7

Plots receiving no nitrogen 1966

N0	N1	N2
40.5	51.9 (±2.45)	56.8

General mean: 51.9

Mean D.M. %: 84.9

67/C/22.1

DD AND DAZOMET - SPRING WHEAT

(ECC and WECD)

Effects of soil fumigants on yield and soil-borne pathogens, Rothamsted (R) Hoosfield and Woburn (W) Lansome, the second year, 1967.

Design: 3 randomised blocks of 3 plots, split into 8 and again into two.

Area of each sub plot: 0.0024. Area harvested: 0.0015.

Treatments: All combinations of:-

Whole plots: 1. Nitrogen: 0.5 (N1), 1.0 (N2), 1.5 cwt N (N3) as 'Nitro-Chalk'.

1/8 plots: 2. Fumigants: None (O), None, rotary cultivated (R), DD: 200 (D2), 400 (D4), 800 lb (D8) injected to 6 inch depth.
Dazomet: 100 (Z1), 200 (Z2), 400 lb (Z4) rotary cultivated in.

1/16 plots: 3. Residual and cumulative effects of factor 2 above: Treatments applied in 1966 only (F), applied in 1966 and 1967 (C).

Basal applications: 280 lb (0:20:20) combine drilled.

Hoosfield (R): Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Lansome (W): Weedkiller: Ioxynil/mecoprop (Actril C at 5 pints in 30 gals).

Cultivations, etc.

Hoosfield (R): Ground chalk applied at 23 cwt: Sept 22, 1966. Ploughed: Oct 17. Dazomet and DD applied, ZC and RC sub-plots rotary cultivated: Feb 7, 1967. Seed drilled at 175 lb: Mar 16. 'Nitro-Chalk' applied: Mar 21. Weedkiller applied: May 18. Combine harvested: Aug 24. Variety: Kloka. Previous crops: Winter barley 1965.

Lansome (W): Ground chalk applied at 2 cwt: Nov 3, 1966. Ploughed: Nov 4. ZC sub-plots dazomet applied rotary cultivated in: Nov 24. DD applied: Dec 8. RC sub-plots rotary cultivated: Jan 17, 1967. Seed drilled at 170 lb: Mar 6. 'Nitro-Chalk' applied: Mar 7. Weedkiller applied: May 3. Combine harvested: Aug 23. Variety: Kloka. Previous crops: Barley 1965.

NOTE: (1) Soil samples were taken for microflora investigations and plant samples for root rotting diseases. Samples were also taken for nematode counts and plant weights, also soil samples for final nematode population (Lansome only).

(2) For previous year's results see 'Results' 66/C/29.

Standard errors per plot. Grain:

Hoosfield (R):

Whole plot: 3.00 or 9.1% (4 d.f.)
1/8 plot: 2.36 or 7.2% (42 d.f.)
1/16 plot: 2.94 or 8.9% (48 d.f.)

Lansome (W):

Whole plot: 5.81 or 12.7% (4 d.f.)
1/8 plot: 4.20 or 9.1% (42 d.f.)
1/16 plot: 5.61 or 12.2% (48 d.f.)

67/C/22.3

SUMMARY OF RESULTS

HDOSFIELD (R)

GRAIN

	O	R	D2	D4	D8	Z1	Z2	Z4	Mean
Mean (±0.79)	32.9	31.1	35.8	34.4	31.6	30.9	33.6	33.2	32.9
									(±1.73)
N1	26.0	23.4	27.9	28.8	26.9	24.8	28.0	28.5	26.8
N2	33.3	33.8	37.3	35.9	32.5	32.2	35.4	33.1	34.2
N3	39.3	36.2	42.2	38.7	35.4	35.9	37.3	37.9	37.9
									(±0.37)
F		31.8	36.4	37.0	37.1	30.0	31.9	31.0	33.6
C		30.4	35.2	31.9	26.2	31.9	35.3	35.4	32.3

% PLANTS AFFECTED

	D2	D4	D8
N1	10.0	9.1	8.3
N2	17.2	13.7	14.9
N3	12.4	19.3	17.0

Mean D.M. %: 81.3

67/C/22.4

LANSOME (W)

GRAIN

	O	R	D2	D4	D8	Z1	Z2	Z4	Mean
Mean (±1.40)	45.4	45.5	45.8	46.5	46.2	43.7	45.3	49.0	45.9
									(±3.36)
N1	36.6	38.4	39.9	44.0	47.7	33.6	43.2	45.4	41.1
N2	52.0	51.8	50.1	49.5	51.0	49.8	47.0	55.4	50.8
N3	47.6	46.3	47.6	46.0	39.9	47.7	45.8	46.3	45.9
									(±0.71)
F		45.1	48.0	47.5	49.8	40.4	44.4	44.9	45.7
C		45.9	43.7	45.5	42.6	47.0	46.3	53.2	46.3

% PLANTS AFFECTED

	D2	D4	D8
N1	10.2	14.7	12.8
N2	13.1	23.2	17.7
N3	30.8	26.8	45.5

Mean D.M. %: 83.9

NOTE: Many plants in plots treated with DD (D2, D4, D8) had deformed and partially sterile ears (No ab normal ears were seen on other plots).

67/C/23.1

INTENSIVE WHEAT

(SC)

Saxmundham, Ollershaw's and Garner's plots 1967, the second year.

Area harvested: 0.0098.

The Meadow Fescue ley is now replaced by a one year Italian ryegrass ley, cut twice for hay, which receives 1.0 cwt N in the seedbed, and 0.5 cwt N and 1.0 cwt K2O after the first cut. N as 'Nitro-Chalk', K2O as muriate of potash.

Basal applications: 560 lb (0:20:20) broadcast before ploughing. Weedkiller to wheat: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 20 gals). Insecticide to beans: Demeton-s-methyl at 3 oz in 37 gals.

Cultivations, etc.: Basal PK compound applied: Sept 20, 1966.
Ploughed: Sept 22.
Wheat: Seed drilled: Oct 17, 1966. 'Nitro-Chalk' applied: Mar 23, 1967. Weedkiller applied: Apr 27. Combine harvested: Aug 17. Variety: Cappelle.
Grass ley: Seed drilled: Mar 14, 1967. 'Nitro-Chalk' applied: Mar 23. Cut: June 13. 'Nitro-Chalk' and muriate of potash applied: June 26. Cut: Aug 8. Variety: S22 Italian.
Beans: Seed drilled at 270 lb: Mar 13, 1967. Insecticide applied: June 12. Combine harvested: Aug 24. Variety: Hasler's Throws.

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: 1.83 or 5.2% (6 d.f.)
Sub plot: 3.05 or 8.7% (18 d.f.)

SUMMARY OF RESULTS

Crop in 66	67	N1	N2	N3	Mean
			GRAIN		
			(1) and (2)		(±0.91)
W	W	27.6	35.6	37.6	33.6
L	W	36.2	43.7	39.4	39.8
W	W	28.4	34.3	32.7	31.8
Mean (±0.88)		30.7	37.9	36.6	35.1

Mean D.M. %: 81.3

(1) (±1.55) For use in vertical and diagonal comparisons
(2) (±1.53) For use in horizontal and interaction comparisons

STRAW

W	W	22.1	30.5	30.4	27.7
L	W	32.2	34.1	33.4	33.2
Mean		27.1	32.3	31.9	30.5

Mean D.M. %: 82.1

67/C/24.1

ORGANIC MANURING EXPERIMENT

(WOM)

The cumulative effects of organic matter on light land - Woburn Stackyard B 1967, 3rd year.

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

Area of each sub plot: 0.0153. Area harvested: Potatoes - 0.0102, leys - 0.0129.

Fertilisers applied Autumn 1966 (cwt)

Treatment	P2O5	K2O	MgO
DG	-	-	-
ST	0.4	-	0.25
PT	0.5	1.0	-
GM	-	1.0	0.15
FD	2.0	3.0	0.8
FS	0.5	1.0	0.15
LC	0.5	2.0	0.15
LN	0.5	2.0	0.15

Fertilisers applied Spring 1967 (cwt)

Treatment	P2O5	K2O	MgO
DG	-	-	-
ST	1.0	1.0	0.20
PT	1.0	1.0	-
GM	1.0	1.0	0.25
FD	2.5	1.2	0.4
FS	1.0	1.0	0.25
LC	1.0	1.25+1.25*	0.5
LN	1.0	1.5 +1.5*	0.5

* After first cut.

Because the peat applied in 1965 and 1966 had less dry matter than expected additional peat was applied and worked in with the Spring fertilisers before the potatoes were planted at 6.10 tons fresh material at 35.5% D.M. equivalent to 2 tons 3 cwt 35 lb dry matter.

Nitrogen to potatoes:
N1, N2, N3, N4. 0.2, 0.6, 1.0, 1.4 cwt N as 'Nitro-Chalk'.

Cultivations, etc.:
LC and LN plots: P,K and Mg applied: Nov 4, 1966. 'Nitro-Chalk' applied to LN plots: Apr 4, 1967, June 19. P,K and Mg applied: Apr 7. LC plots cut: June 8, July 13. LN plots cut: June 8.
Potatoes: P,K and Mg applied: Nov 11, 1966. Peat, straw, dung applied: Nov 28 - 29. Ploughed: Nov 30 - Dec 1. Additional peat applied: Apr 4, 1967. N,P,K and Mg applied: Apr 4 - 6. Rotary cultivated, potatoes planted: Apr 5 - 7. Earthed up: May 10. Rotary ridged: June 10. Sprayed with mancozeb at 1.2 lb in 30 gals: July 1, July 28, Aug 8. Sprayed with undiluted BOV at 15 gals: Aug 21. Lifted: Sept 12 - 13. Variety: Majestic.

Standard errors per plot. Potatoes, total tubers:
Whole plot: 1.340 or 19.2% (15 d.f.)
Sub plot: 0.925 or 13.2% (54 d.f.)

SUMMARY OF RESULTS

POTATOES

	N0	N1	N2	N3	Mean
		TOTAL TUBERS			
		(1) and (2)			(±0.670)
DG	5.77	6.93	8.97	10.43	8.02
ST	3.95	5.70	7.90	8.91	6.62
PT	3.61	6.10	5.68	7.83	5.80
GM	6.67	8.28	10.18	11.06	9.05
FD	4.45	5.85	8.25	9.62	7.04
FS	3.67	5.03	6.06	6.97	5.43
Mean (±0.189)	4.69	6.32	7.84	9.14	6.99

(1) (±0.780) For use in vertical and diagonal comparisons
(2) (±0.462) For use in horizontal and interaction comparisons

		% WARE			
DG	85.5	88.9	90.5	89.6	88.6
ST	82.2	83.9	90.3	90.4	86.7
PT	80.0	83.8	87.6	88.2	84.9
GM	85.4	89.6	89.6	91.5	89.0
FD	86.5	87.7	91.4	88.8	88.6
FS	84.4	83.9	87.4	85.4	85.3
Mean	84.0	86.3	89.5	89.0	87.2

67/C/24.4

GRASS: DRY MATTER

	LC	LN
	1ST CUT	
	33.1	42.1
	2ND CUT	
	2.9	-
	TOTAL OF 2 CUTS	
	35.9	42.1
Mean D.M. %: 1st cut:	18.0	24.7
2nd cut:	37.8	-

67/C/25.1

IRRIGATION AND EELWORM

(WCE)

Butt Close Woburn, the second year - potatoes

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 for the previous years' results see 'Results' 66/C/32. Irrigation and fumigant treatments are cumulative.

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

Irrigation (C) 1967: (inches water)

Series I		Series IV	
June 13	1.00	June 16	1.00
June 21	1.00	June 22	1.00
July 5	0.50	July 6	0.50
July 11	0.75	July 12	0.75
July 18	0.50	July 19	0.50
July 20	0.25	July 21	0.25
August 8	0.25	August 11	0.25
Total	4.25		4.25

Basal applications: 9 cwt (13:13:20). Weedkiller: Linuron at 0.25 lb plus paraquat at 0.5 lb ion in 50 gals. Fungicide: Mancozeb at 1.2 lb in 30 gals.

Cultivations, etc.: Ground chalk applied at 20 cwt: Oct 29, 1966. Deep-tine cultivated twice: Oct 31, Nov 4. Fumigant injected (Series I): Nov 21 - 22, (Series IV): Nov 22, Dec 5. Deep-tine cultivated: Mar 6, 1967. Fertilisers applied: Mar 20. Rotary cultivated, potatoes planted: Mar 29 - 30. Weedkiller applied: May 3. Rotary ridged: June 9. Fungicide applied: June 30, July 26. Sprayed with undiluted BOV at 15 gals: Aug 21. Lifted: Sept 14.

Note: Soil samples were taken from each plot after fmigation and before cropping. Cyst and egg counts were made, and soil used for root invasion tests.

67/C/25.2

Standard errors per plot. Total tubers:

Series I

Strip: 1.024 or 15.1% (6 d.f.)
1/2 plots: 1.136 or 16.8% (8 d.f.)
1/4 plots: 0.969 or 14.3% (16 d.f.)

Series IV

Strip: 2.568 or 22.6% (6 d.f.)
1/2 plots: 2.270 or 20.0% (8 d.f.)
1/4 plots: 2.282 or 20.1% (16 d.f.)

67/C/25.3

SUMMARY OF RESULTS

SERIES I

	DS	DA	PS	PA	Mean
		TOTAL TUBERS			
Mean (±0.296)	2.62	6.63	9.04	8.77	6.77
		(±0.464)*			
O	2.05	5.58	8.03	7.60	5.82
C	3.19	7.67	10.05	9.94	7.71
		(±0.396)			(±0.198)
O	0.93	3.88	5.80	4.94	3.89
F	4.30	9.37	12.28	12.61	9.64
		% WARE 1.5 INCH RIDDLE			
Mean	73.7	86.5	88.2	94.2	85.6
O	73.4	84.9	87.8	94.4	85.1
C	74.0	88.1	88.5	94.0	86.2
O	63.8	81.2	84.4	91.2	80.1
F	83.5	91.9	91.9	97.2	91.1

* For use in interaction comparisons only.

SERIES IV

	DS	DA	PS	PA	Mean
		TOTAL TUBERS			
Mean (±0.741)	8.95	13.18	12.36	10.89	11.34
		(±0.926)*			
O	8.31	12.27	12.24	9.95	10.70
C	9.59	14.08	12.48	11.83	11.99
		(±0.932)			(±0.466)
O	5.92	10.24	10.99	8.64	8.95
F	11.99	16.11	13.73	13.14	13.74
		% WARE 1.5 INCH RIDDLE			
Mean	89.4	95.5	91.2	94.5	92.7
O	89.4	95.0	92.3	93.9	92.7
C	89.4	96.0	90.2	95.1	92.7
O	83.3	94.7	90.2	94.1	90.6
F	95.6	96.3	92.3	94.9	94.8

* For use in interaction comparisons only.

67/C/26.1

WINTER WHEAT

(WBW)

Direct seeding, Woburn White Horse Field 1967, the second year.

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

Area of each sub plot: 0.0149. Area harvested: 0.0071.

Treatments: All combinations of:-

Whole plots: 1. Seedbed preparation: Direct seeding after paraquat at 1 lb ion in 33 gals, Sept 27, 1966 and 0.75 lb ion in 20 gals Oct 25 (S). Normal cultivations (M) (called P in 1966).

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

Sub plots: 3. Insecticide spray: None (DO), diazinon at 3.2 lb a.i. plus chlordane at 2.8 lb a.i. plus DDT at 3.1 lb a.i. plus zinophos at 3.2 lb a.i. in 50 gals (DD).

Basal applications: 5 cwt (0:14:28) combine drilled. 0.8 cwt N as 'Nitro-Chalk' top dressed. Weedkiller: MCPA/dichloroprop (Seritox at 4 pts in 25 gals).

Cultivations, etc.: 'S' plot sprayed with paraquat: Sept 27, 1966 and Oct 25. 'M' plots ploughed: Sept 30. Insecticide applied: Oct 21. Seed combine drilled at 180 lb: Oct 27. 'Nitro-Chalk' applied: Apr 24, 1967. Weedkiller applied: Apr 28. Combine harvested: Aug 22. Variety: Cappelle.

NOTES: (1) Counts of soil fauna were made in June, July and Sept. Earthworms were included in the last count.
(2) For the previous years' results see 'Results' 66/C/33.
(3) Slugs severely damaged the crop on the S plots.

Standard errors per plot. Grain:
Whole plot: 3.72 or 7.2% (9 d.f.)
Sub plot: 4.52 or 8.7% (12 d.f.)

SUMMARY OF RESULTS

GRAIN

	SO	SI	DO	DD	Mean
	(±1.86)		(1) and (2)		(±1.32)
S	41.8	47.5	44.5	44.8	44.7
M	58.2	60.2	60.3	58.2	59.2
			(1) and (2)		(±1.32)
SO			51.5	48.5	50.0
SI			53.3	54.5	53.9
Mean (±1.13)			52.4	51.5	51.9

(1) (±1.73) For use in vertical and diagonal comparisons
(2) (±1.60) For use in horizontal and interaction comparisons

	S		M	
	DO	DD	DO	DD
	(3) and (4)			
SO	43.5	40.1	59.5	56.9
SI	45.5	49.6	61.1	59.4

(3) (±2.45) For use in ~~vertical and diagonal comparisons~~ comparisons involving different whole plot combinations
(4) (±2.26) For use in ~~horizontal and interaction comparisons~~ comparisons within the same whole plot combinations

Mean D.M. %: 85.9

67/C/27.1

LEGUMES AND BARLEY

(CH)

Effects of crop sequences and green manures - Highfield IV 1967, the first year.

Design: 2 randomised blocks of 12 plots.

Area of each plot: 0.0521. Area harvested: Barley and oats - 0.0276, oilseed rape - 0.0296, red clover - 0.0059, spring beans - 0.0311.

Treatments:

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.

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

Basal and other applications: 280 lb (0:20:20) broadcast, ground chalk at 40 cwt to southern half, at 80 cwt to northern half. Weed-killers: Beans - simazine at 1 lb in 32 gals, barley and oats (excluding undersown plots) - ioxynil/mecoprop (Actril C at 5 pints in 20 gals). Insecticides: Beans - demeton-s-methyl at 3 oz in 37 gals and later at 3.75 oz in 30 gals by hand, oilseed rape - malathion at 18 oz in 30 gals.

Cultivations, etc.: Ploughed: Nov 4, 1966. Ground chalk applied: Jan 6 and Feb 9, 1967. Basal PK compound applied, oats drilled at 160 lb, barley at 140 lb, beans at 200 lb, weedkiller applied to beans: Mar 8. 'Nitro-Chalk' applied to oats and barley: Mar 28. Clover sown at 30 lb: Mar 29. Oilseed rape sown at 7.5 lb: Mar 30. Trefoil sown at 32 lb: May 9. Weedkiller applied to barley and oats: June 1. Insecticides applied: Beans - June 14, rape - June 16, beans - July 7. Clover cut twice: Aug 4 and Oct 2. Combine harvested: Oats - Aug 22, barley - Aug 23, beans - Sept 1, oilseed rape - Sept 6. Varieties: Oats - Manod, barley - Maris Badger, beans - Tarvin, oilseed rape - Nilla, clover - Dorset Marl, trefoil - English (inoculated seed).

SUMMARY OF RESULTS

GRAIN

UNDERSOWN

	-	T	Mean
	BARLEY		
N1	31.1	32.3	31.7
N2	36.8	34.0	35.4
Mean	34.0	33.1	33.6

Mean D.M. %: 82.5

	OATS		
N1	32.7	32.3	32.5
N2	36.4	34.5	35.5
Mean	34.6	33.4	34.0

Mean D.M. %: 83.3

67/C/27.3

OILSEED RAPE

SEED

N2	N4	Mean
17.5	16.2	16.9

Mean D.M. %: 85.8

RED CLOVER

	1ST CUT	2ND CUT	TOTAL OF 2 CUTS
Mean	29.2	22.9	52.1
Mean D.M. %:	18.0	14.7	16.4

SPRING BEANS

GRAIN

Mean	30.6
Mean D.M. %:	74.2

67/C/28.1

EFFECT OF POTATO HAULM ON WINTER WHEAT

(CK and WCN)

Rothamsted (R) Pastures and Woburn (W) Broadmead II, 1967, the first year (potatoes).

Design: 4 blocks of 8 plots, randomisation restricted.

Area of each plot: 0.0161. Area harvested: Pastures (R) - 0.0096, Broadmead II (W) - 0.0099.

Treatments: All combinations of:-
1. Nitrogen to potatoes: None (N0), 0.66 (N2), 1.32 (N4), 2.0 (N6) as 'Nitro-Chalk'.
2. Haulm disposal: Burnt off with acid (B), cut and removed (C).

Basal applications: 1200 lb (0:14:28) broadcast by drill.
Pastures (R): Weedkiller: Linuron at 0.75 lb plus paraquat at 0.5 lb ion in 37 gals. Fungicide: Mancozeb at 1.2 lb in 30 gals on four occasions.
Broadmead II (W): Weedkiller: Linuron at 0.5 lb plus paraquat at 0.5 lb ion in 50 gals. Insecticide: Ground application - demeton-s-methyl 3 oz in 30 gals, aerial application (by fixed wing aircraft) 3 oz in 2 gals. Fungicide: Mancozeb at 1.2 lb in 30 gals on 3 occasions.

Cultivations, etc.:-
Pastures (R): Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal PK applied: Mar 31. 'Nitro-Chalk' applied: Apr 4. Rotary cultivated second time, potatoes planted: Apr 6. Weedkiller applied: May 12. Fungicide applied: June 29, July 21, Aug 3, Aug 8. Haulm removed from C plots: Aug 29. B plots sprayed with undiluted BOV at 15 gals: Sept 7. Haulm destroyed mechanically: Sept 14. Lifted: Sept 15. Variety: Pentland Dell. Previous crops: Barley 1965, fallow 1966.
Broadmead II (W): Ploughed: Oct 22, 1966. Ground chalk applied at 4.5 tons: Jan 9, 1967. Basal PK applied: Mar 20. 'Nitro-Chalk' applied: Mar 28. Potatoes planted: Mar 30. Weedkiller applied: May 3. Rotary ridged: June 9. Insecticide and fungicide applied: June 20. Fungicide applied: June 30, Aug 8.

Insecticide applied from the air: July 13. Haulm removed from C plots: Aug 24. B plots sprayed with diquat (Reglone at 4 pints in 40 gals): Aug 25. Lifted: Sept 11. Variety: Pentland Dell. Previous crops: Winter wheat 1965, spring wheat 1966.

NOTE: Samples of haulm were taken from C plots at the time of cutting for dry matter and percentage N. Potatoes were sampled at harvest for dry matter and percentage N.

Standard errors per plot. Total tubers:
Pastures (R): 0.925 or 5.0% (21 d.f.)
Broadmead II (W): 1.198 or 11.7% (21 d.f.)

67/C/28.3

SUMMARY OF RESULTS

TOTAL TUBERS

	N0	N2	N4	N6	Mean
	PASTURES (R)				
	(±0.463)				(±0.231)
B	15.91	17.96	20.10	20.93	18.73
C	14.68	19.25	19.10	19.53	18.14
Mean (±0.327)	15.29	18.60	19.60	20.23	18.43
	BROADMEAD II (W)				
	(±0.599)				(±0.299)
B	7.85	9.24	12.96	12.06	10.53
C	6.43	9.98	10.95	12.33	9.92
Mean (±0.423)	7.14	9.61	11.96	12.19	10.23

67/C/28.4

% WARE

	N0	N2	N4	N6	Mean
	PASTURES (R)				
B	98.2	98.5	98.1	98.1	98.2
C	97.6	98.2	98.7	98.1	98.1
Mean	97.9	98.3	98.4	98.1	98.2
	BROADMEAD II (W)				
B	90.6	94.9	97.1	96.9	94.9
C	86.9	94.6	96.4	97.3	93.8
Mean	88.8	94.8	96.8	97.1	94.3

67/C/29.1

WINTER WHEAT

(EA)

Soil sterilants, Claycroft 1967.

Design: 4 randomised blocks of 10 plots.

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

Treatments: All combinations of:-
1. Soil sterilants: None (O), none, plots rotary cultivated (R), DD at 800 lb injected (D), dazomet at 400 lb rotary cultivated in (Z), formalin drench (F) at 372 gals of formalin in 9680 gals.
2. Nitrogen: None (N0), 1.0 cwt (N1) N as 'Nitro-Chalk'.

Basal applications: 280 lb (0:20:20) combine drilled. Weedkiller: Aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals.

Cultivations, etc.:- Weedkiller applied: Sept 20, 1966. Ploughed: Oct 6. Formalin drench applied: Oct 7. DD applied, R plots rotary cultivated, dazomet applied and rotary cultivated in: Oct 11. Seed drilled at 180 lb: Nov 29. 'Nitro-Chalk' applied: Apr 17, 1967. Combine harvested: Aug 30. Variety: Cappelle. Previous crops: Barley 1965 and 1966.

NOTE: Plant samples were taken for disease analysis in April, May, June and July. Soil samples were taken for determination of ammonia nitrogen and nitrate nitrogen in Nov 1966 and March 1967.

Standard error per plot.
Grain: 3.92 or 7.9% (27 d.f.)

67/C/29.2

SUMMARY OF RESULTS

GRAIN

	O	R	D	Z	F	Mean
			(±1.96)			(±0.88)
NO	49.5	49.7	41.8	54.9	53.4	49.9
N1	54.9	52.7	39.7	53.6	46.8	49.5
Mean (±1.39)	52.2	51.2	40.8	54.3	50.1	49.7

% PLANTS AFFECTED

NO	N1
72.0	94.4

Mean D.M. %: 84.9

NOTE: Many plants in plots treated with DD had deformed and partially sterile ears. (No abnormal ears were seen on other plots).

67/C/30.1

SPRING BEANS

(EZ)

N and growth regulators, Long Hoos III 1967.

Design: 2 randomised blocks of 24 plots.

Area of each plot: 0.0010. Area harvested: 0.0005.

Treatments: All combinations of:-
1. Nitrogen: None (N0), 1.5 cwt (N1), 3.0 cwt (N2) as 'Nitro-Chalk'.
2. Times of application: In the seedbed (E), half in the seedbed, half in June (EL).
3. Growth regulators: None (O), chlormequat* at 5 lb in 112 gals (C), DSA** at 5 lb in 112 gals (D), topped after flowering (T).

* 2 chloroethyltrimethylammonium chloride, formerly known as CCC.
** Dimethylaminosuccinamic acid (previously called 'B-Nine', now called alar).

Basal applications: 210 lb (0:20:20) placement drilled. Weedkiller: Simazine at 1 lb in 32 gals. Insecticide: Demeton-s-methyl at 3 oz in 37 gals and later at 3 oz in 3 gals by fixed-wing aircraft.

Cultivations, etc.: Ploughed: Sept 22, 1966. Ground chalk applied at 50 cwt: Jan 7, 1967. Ploughed 2nd time: Jan 13. Seed drilled at 200 lb: Mar 16. Seedbed 'Nitro-Chalk' applied: Mar 17. Weed-killer applied: Mar 18. Chlormequat and DSA applied: May 9. Second half dressing of 'Nitro-Chalk' applied to EL treatment: May 31. Insecticide applied: June 14 and July 11. Plants topped (T treatment): July 5. Hand harvested: Sept 5. Variety: Tarvin. Previous crops: Potatoes 1965, spring wheat 1966.

Standard error per plot.
Grain: 2.77 or 7.5% (23 d.f.)

67/C/30.2

SUMMARY OF RESULTS

GRAIN

	E	EL	O	C	D	T	Mean
	(±0.98)			(±1.39)			(±0.69)
N0	-	-	37.2	34.7	35.1	35.3	35.6
N1	36.8	36.6	38.3	36.9	35.5	36.0	36.7
N2	38.3	39.4	39.7	37.8	39.0	38.8	38.8
E*			39.2	36.6	37.5	36.8	37.5
EL*			38.8	38.1	37.0	38.0	38.0
Mean (±0.80)			38.4	36.5	36.5	36.7	37.0

Mean D.M. %: 77.2

* The figures in these two lines are means over N1 and N2 only.

67/C/31.1

GRASS

(EAA)

Effects of formalin and nitrogen, Fosters O & E I, 1967.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0016. Area harvested: 0.0010.

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

NOTE: Because the grass established poorly the N dressings were repeated on 9 June (before the 1st cut).

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

Cultivations, etc.: Ploughed: Nov 8, 1966. Formalin applied: Feb 10, 1967. Basal PK and 1st N dressings applied, seeds sown at 30 lb: Mar 20. N dressings repeated: June 9. Cut three times: July 10, Sept 5 and Nov 6. Calcium nitrate applied after 1st and 2nd cuts. Varieties: Soots Timothy and Meadow Fescue (S53). Previous crops: Potatoes 1965, barley 1966.

Standard errors per plot. Dry matter:

1st cut:	2.10 or 12.8% (21 d.f.)
2nd cut:	1.99 or 7.1% (21 d.f.)
3rd cut:	0.79 or 14.4% (21 d.f.)
Total of 3 cuts:	3.11 or 6.2% (21 d.f.)

67/C/31.2

SUMMARY OF RESULTS

DRY MATTER

	N0	N1	N2	N3	Mean
		1ST CUT			
		(±1.05)			(±0.53)
O	5.0	12.2	16.5	18.3	13.0
F	12.9	20.1	23.6	23.1	19.9
Mean (±0.74)	8.9	16.1	20.0	20.7	16.4
		2ND CUT			
		(±0.99)			(±0.50)
O	17.5	29.7	32.4	32.1	27.9
F	18.4	29.0	32.9	32.9	28.3
Mean (±0.70)	17.9	29.4	32.6	32.5	28.1

Mean D.M. %: 1st cut: 23.0
2nd cut: 20.6

67/C/31.3

DRY MATTER

	N0	N1	N2	N3	Mean
		3RD CUT			
		(±0.40)			(±0.20)
O	0.7	6.2	7.9	6.4	5.3
F	1.2	6.6	7.8	7.2	5.7
Mean (±0.28)	0.9	6.4	7.9	6.8	5.5
		TOTAL OF 3 CUTS			
		(±1.55)			(±0.78)
O	23.2	48.1	56.8	56.8	46.2
F	32.4	55.7	64.3	63.3	53.9
Mean (±1.10)	27.8	51.9	60.5	60.1	50.1

Mean D.M. %: 3rd cut: 21.9
Total of 3 cuts: 21.9

67/C/32.1

GRASS

(EAB)

The effect of granule size on the rate of release of N from IBDU (Iso-butylidene di-urea), Fosters O and E I, 1967.

Design: 3 randomised blocks of 18 plots.

Area of each plot: 0.0009. Area harvested: 0.0005.

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).

Basal application: 4 cwt (0:14:28).

Cultivations, etc.: Ploughed: Nov 8, 1966. Rotary cultivated, fertilisers applied, seed drilled at 30 lb: Mar 29. Cut four times: June 21, July 21, Sept 5 and Nov 11. Variety: S22 Italian ryegrass. Previous crops: Potatoes 1965, barley 1966.

NOTE: % N in grass was determined and N uptakes calculated.

Standard errors per plot. Dry matter:

1st cut	4.21 or 24.6%	(34 d.f.)
2nd cut:	1.81 or 8.7%	(34 d.f.)
3rd cut:	2.72 or 18.3%	(34 d.f.)
4th cut:	0.96 or 16.3%	(34 d.f.)
Total of 4 cuts:	7.64 or 13.0%	(34 d.f.)

67/C/32.2

SUMMARY OF RESULTS

DRY MATTER

	O	A	P	S	M	L	Mean
			1ST CUT				
				(±2.43)			(±1.09)
N1		20.2	18.8	18.7	15.0	8.2	16.2
N2		24.9	22.6	22.1	20.1	13.6	20.7
N3		23.1	24.0	22.5	22.3	17.2	21.8
Mean (±1.40)	5.1	22.7	21.8	21.1	19.1	13.0	17.2*
			2ND CUT				
				(±1.05)			(±0.47)
N1		22.4	20.4	21.0	17.4	14.5	19.2
N2		28.4	24.4	25.2	22.5	19.6	24.0
N3		25.4	27.2	27.4	24.4	22.5	25.4
Mean (±0.60)	10.3	25.4	24.0	24.5	21.4	18.9	20.8*

* General mean

Mean D.M. %: 1st cut: 21.3
2nd cut: 22.4

67/C/32.3

DRY MATTER

	O	A	P	S	M	L	Mean
			3RD CUT				
				(±1.57)			(±0.70)
N1		9.4	12.5	12.6	10.1	11.6	11.2
N2		17.3	17.9	18.1	17.5	14.0	17.0
N3		24.8	21.1	20.8	21.5	16.2	20.9
Mean (±0.91)	7.2	17.2	17.2	17.2	16.4	13.9	14.8*
			4TH CUT				
				(±0.55)			(±0.25)
N1		2.5	4.0	4.5	4.7	4.8	4.1
N2		3.9	5.9	7.5	8.6	7.9	6.8
N3		7.3	8.3	9.0	11.6	9.4	9.1
Mean (±0.32)	2.0	4.6	6.1	7.0	8.3	7.4	5.9*

* General mean

Mean D.M. %: 3rd cut: 24.2
4th cut: 20.8

67/C/32.4

DRY MATTER

	O	A	P	S	M	L	Mean
		TOTAL OF 4 CUTS					
				(±4.41)			(±1.97)
N1		54.5	55.7	56.9	47.2	39.0	50.7
N2		74.5	70.8	72.7	68.7	55.2	68.4
N3		80.6	80.7	79.7	79.8	65.4	77.2
Mean (±2.55)	24.6	69.9	69.1	69.8	65.3	53.2	58.6*

* General mean

Mean D.M. %: 22.2

67/C/33.1

N FIXATION - LUCERNE AND GRASS

(EAT and WEAQ)

Nitrogen fixation by lucerne - Rothamsted (R) Stackyard and Woburn (W) Stackyard C 1967, the first year.

Design: 4 blocks of four plots split into four for minerals and nitrogen.

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 2001 (E), Italian ryegrass (G).

Sub-plots: 2. Minerals: Unmanured (U), 0.6 cwt P_2O_5, 1.2 cwt K_2O as compound fertiliser (0:14:28), plus 4 tons of ground chalk (5 tons on Stackyard C (W)) (M).

3. Nitrogen (as 'Nitro-Chalk'): None (N0), 60 lb N* before the first cut (N1), 60 lb N* before the first cut, 60 lb after the first cut (N2), 60 lb N* before the first cut, 60 lb after the first cut, 60 lb after the second cut (N3).

*30 lb in the seedbed, 30 lb in June.

Basal applications: None.

Cultivations, etc.:-

Stackyard (R): Ploughed: Nov 16, 1966. PK, ground chalk and seedbed 'Nitro-Chalk' applied, plots rotary cultivated, seed drilled, lucerne at 12 lb, ryegrass at 30 lb: Apr 26, 1967. 'Nitro-Chalk' applied: June 27. Cut three times: June 24, Aug 29, Oct 25. Appropriate 'Nitro-Chalk' dressings applied after first two cuts. Varieties: Lucerne - Du Puits, ryegrass S22. Previous crops: Barley 1965, barley 1966.

Stackyard C (W): Ploughed: Oct 28, 1966. PK, ground chalk and seedbed 'Nitro-Chalk' applied, plots rotary cultivated, seed drilled, lucerne at 12 lb, ryegrass at 30 lb: Apr 27. 'Nitro-Chalk' applied: June 28. Cut three times: July 26, Sept 4, Oct 24. Appropriate 'Nitro-Chalk' dressings applied after first two cuts. Varieties: Lucerne - Du Puits, ryegrass S22. Previous crops: Fallow 1965 and 1966.

NOTE: Soil samples were taken to determine pH before sowing. Rhizobium counts were taken from root samples on each experiment.

Standard errors per plot. Dry matter:

Stackyard (R):	1st cut:	Whole plot:	3.58 or 25.0% (6 d.f.)
		Sub plot:	2.20 or 15.4% (24 d.f.)
	2nd cut:	Whole plot:	2.06 or 10.9% (6 d.f.)
		Sub plot:	2.77 or 14.6% (24 d.f.)
	3rd cut:	Whole plot:	0.42 or 7.8% (6 d.f.)
		Sub plot:	1.91 or 35.3% (24 d.f.)
	Total of 3 cuts:	Whole plot:	4.81 or 12.5% (6 d.f.)
		Sub plot:	4.87 or 12.6% (24 d.f.)
Stackyard C (W):	1st cut:	Whole plot:	5.36 or 32.4% (6 d.f.)
		Sub plot:	4.38 or 26.5% (24 d.f.)
	2nd cut:	Whole plot:	2.74 or 20.7% (6 d.f.)
		Sub plot:	2.68 or 20.2% (24 d.f.)
	3rd cut:	Whole plot:	3.15 or 43.5% (6 d.f.)
		Sub plot:	1.60 or 22.1% (24 d.f.)
	Total of 3 cuts:	Whole plot:	9.01 or 24.3% (6 d.f.)
		Sub plot:	7.65 or 20.7% (24 d.f.)

67/C/33.3

SUMMARY OF RESULTS

DRY MATTER

	O	I	E	G	Mean
		STACKYARD (R)			
		1ST CUT			
Mean (±1.79)	8.8	5.6	20.4	22.4	14.3
		(1) and (2)			(±0.39)
U	7.6	5.1	17.4	22.0	13.0
M	10.1	6.1	23.4	22.8	15.6
		(3) and (4)			(±0.55)
NO	7.0	3.6	19.7	11.4	10.4
N1	9.1	7.1	20.0	26.2	15.6
N2	8.8	6.6	21.7	24.5	15.4
N3	10.3	5.1	20.1	27.5	15.8

Mean D.M. %: 27.8

(1) (±1.87) (3) (±2.03) For use in horizontal and diagonal comparisons only
(2) (±0.78) (4) (±1.10) For use in vertical and interaction comparisons only

NOTE: 1st cut N1 = N2 = N3

67/C/33.4

DRY MATTER

	O	I	E	G	Mean
		STACKYARD (R)			
		2ND CUT			
Mean (±1.03)	20.3	16.0	24.3	15.0	18.9
		(1) and (2)			(±0.49)
U	18.4	14.4	21.7	15.7	17.6
M	22.2	17.5	26.8	14.3	20.2
		(3) and (4)			(±0.69)
NO	15.4	6.9	23.0	4.5	12.5
N1	18.7	14.2	23.2	7.9	16.0
N2	23.6	21.9	25.2	24.7	23.9
N3	23.4	20.8	25.7	22.8	23.2

Mean D.M. %: 19.7

(1) (±1.24) (3) (±1.58) For use in horizontal and diagonal comparisons only
(2) (±0.98) (4) (±1.38) For use in vertical and interaction comparisons only

NOTE: 2nd cut N2 = N3

67/C/33.5

DRY MATTER

	O	I	E	G	Mean
		STACKYARD (R)			
		3RD CUT			
Mean (±0.21)	6.6	4.5	6.6	4.0	5.4
		(1) and (2)			(±0.34)
U	5.5	4.1	5.7	4.3	4.9
M	7.7	4.9	7.5	3.7	5.9
		(3) and (4)			(±0.48)
NO	6.2	3.8	7.7	1.6	4.8
N1	5.1	3.6	6.3	1.7	4.2
N2	6.7	3.5	5.9	3.2	4.8
N3	8.3	7.0	6.6	9.4	7.8

Mean D.M. %: 20.9

(1) (±0.52) (3) (±0.85) For use in horizontal and diagonal comparisons only
(2) (±0.68) (4) (±0.95) For use in vertical and interaction comparisons only

67/C/33.6

DRY MATTER

	O	I	E	G	Mean
STACKYARD (R)					
TOTAL OF 3 CUTS					
Mean (±2.40)	35.7	26.0	51.3	41.4	38.6
		(1) and (2)			(±0.86)
U	31.4	23.6	44.8	42.0	35.4
M	40.0	28.4	57.8	40.8	41.7
		(3) and (4)			(±1.22)
NO	28.7	14.3	50.4	17.5	27.7
N1	32.9	24.9	49.5	35.8	35.8
N2	39.1	32.0	52.7	52.4	44.1
N3	42.1	32.9	52.4	59.8	46.8

Mean D.M. %: 22.8

(1) (±2.69) (3) (±3.20) For use in horizontal and diagonal comparisons only
(2) (±1.72) (4) (±2.43) For use in vertical and interaction comparisons only

67/C/33.7

DRY MATTER

	O	I	E	G	Mean
		STACKYARD C (W)			
		1ST CUT			
Mean (±1.34)	14.0	13.1	19.0	20.0	16.5
		(1) and (2)			(±0.77)
U	11.9	13.1	16.5	19.9	15.3
M	16.2	13.1	21.5	20.2	17.8
		(3) and (4)			(±1.09)
NO	12.4	8.4	16.9	7.8	11.4
N1	15.8	13.8	21.6	23.4	18.7
N2	12.1	14.7	20.3	25.7	18.2
N3	15.8	15.4	17.3	23.3	17.9

Mean D.M. %: 26.6

(1) (±1.73) (3) (±2.32) For use in horizontal and diagonal comparisons only
(2) (±1.55) (4) (±2.19) For use in vertical and interaction comparisons only

NOTE: 1st cut N1 = N2 = N3

67/C/33.8

DRY MATTER

	O	I	E	G	Mean
		STACKYARD C (W)			
		2ND CUT			
Mean (±0.68)	14.0	12.7	16.6	9.7	13.2
		(1) and (2)			(±0.47)
U	12.1	11.7	14.6	9.3	11.9
M	15.9	13.7	18.7	10.1	14.6
		(3) and (4)			(±0.67)
N0	12.4	9.2	13.9	2.6	9.5
N1	14.6	10.2	17.2	4.5	11.7
N2	14.4	16.2	18.3	15.2	16.0
N3	14.5	15.2	17.1	16.3	15.8

Mean D.M. %: 26.2

(1) (±0.96) (3) (±1.35) For use in horizontal and diagonal comparisons only
(2) (±0.95) (4) (±1.34) For use in vertical and interaction comparisons only

NOTE: 2nd cut N2 = N3

67/C/33.9

DRY MATTER

	O	I	E	G	Mean
STACKYARD C (W)					
3RD CUT					
Mean (±0.79)	8.3	6.5	8.7	5.5	7.2
		(1) and (2)			(±0.28)
U	7.2	5.4	8.3	5.3	6.5
M	9.4	7.5	9.2	5.7	7.9
		(3) and (4)			(±0.40)
N0	6.8	5.4	7.5	1.2	5.2
N1	8.8	4.9	9.0	1.7	6.1
N2	7.7	7.2	9.2	3.7	6.9
N3	9.9	8.4	9.2	15.3	10.7

Mean D.M. %: 19.9

(1) (±0.88) (3) (±1.05) For use in horizontal and diagonal comparisons only
(2) (±0.57) (4) (±0.80) For use in vertical and interaction comparisons only

67/C/33.10

DRY MATTER

	O	I	E	G	Mean
		STACKYARD C (W)			
		TOTAL OF 3 CUTS			
Mean (±2.25)	36.3	32.2	44.4	35.2	37.0
		(1) and (2)			(±1.35)
U	31.2	30.2	39.3	34.4	33.8
M	41.5	34.3	49.4	35.9	40.3
		(3) and (4)			(±1.91)
NO	31.7	23.0	38.3	11.5	26.1
N1	39.3	29.0	47.8	29.6	36.4
N2	34.2	38.1	47.8	44.6	41.2
N3	40.1	38.9	43.5	54.9	44.4

Mean D.M. %: 24.2

(1) (±2.95) (3) (±4.01) For use in horizontal and diagonal comparisons only
(2) (±2.71) (4) (±3.83) For use in vertical and interaction comparisons only

67/C/34.1

PLACEMENT OF FUMIGANT FOR POTATOES

(WEAM)

Economic row and planting-station fumigation for control of potato cyst-nematode - Woburn Butt Furlong 1967.

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 lb (D4) placed in the row by gravity feed, and 140 lb (DH) injected into the row at 18 in. intervals.

Basal applications: 10 cwt (17:11:22). Weedkiller: Paraquat at 0.5 lb plus linuron at 0.25 lb in 30 gals. Fungicide: Mancozeb 1.2 lb in 37 gals on 2 occasions.

Cultivations, etc.: Ploughed: Dec 19, 1966. Basal NPK applied: Mar 3, 1967. Rotary cultivated, rotary ridged, DD applied in the ridge: Mar 7. Potatoes hand planted in ridges at 18 inch intervals: Apr 19. Sprayed weedkiller: May 9. Rotary ridged: June 9. Sprayed fungicide: July 1 and July 26. Lifted: Sept 6. Variety: Majestic. Previous crops: Barley 1965, potatoes 1966.

Standard error per plot.
Total tubers: 0.668 or 8.9% (8 d.f.)

67/C/34.2

SUMMARY OF RESULTS

D0	D1	D2	D4	DH	Mean
		TOTAL TUBERS			
2.21	6.62	8.54 (±0.386)	12.29	7.92	7.52
		% WARE			
51.9	68.7	76.4	81.0	71.3	69.9

67/C/35.1

SOIL STERILISATION EXPERIMENT

(SAX/SS/1)

Soil sterilisation and N, Saxmundham, Grove Plot, 1967 - barley, potatoes, sugar beet.

Design (each crop)*: 3 randomised blocks of 5 plots, with one plot sterilised and split for N.

* One block of potatoes was abandoned due to water-logging.

Area of each plot: 0.0022. Area harvested: 0.0019.

Treatments:	No N	(N0)
	0.5 cwt N	(N1)
	1.0 cwt N	(N2)
	1.5 cwt N	(N3)
	Sterilised with methyl bromide** and plots split for N1 v N2	(S)

All N as 'Nitro-Chalk'.

** At 520 lb.

Basal applications: 1.0 cwt P_2O_5, 2.0 cwt K_2O as (0:10:20).

Cultivations, etc.: Ploughed: Nov 29 - Dec 16, 1966. Basal PK applied: Mar 15, 1967. N applied, methyl bromide applied: Mar 21.

Potatoes: Planted: Mar 29, 1967. Lifted: Sept 1. Variety: King Edward.
Barley: Seed drilled: Mar 29, 1967. Harvested by hand: Aug 15. Variety: Maris Badger.
Sugar beet: Seed drilled: Mar 30, 1967. Lifted: Sept 19. Variety: Klein E.

Previous crops: Barley 1965, fallow 1966.

NOTE: The yields from the two halves of the S plots (SN1 and SN2) were bulked at harvest.

Standard errors per plot.

Potatoes. Total tubers:	1.683 or 17.3%	(4 d.f.)
Barley. Grain:	4.24 or 13.3%	(8 d.f.)
Sugar beet. Roots (washed):	2.743 or 15.1%	(8 d.f.)
Tops:	2.026 or 23.3%	(8 d.f.)

SUMMARY OF RESULTS

N0	N1	N2	N3	S	Mean
		POTATOES			
		TOTAL TUBERS			
		(±1.190)			
8.48	9.56	8.91	9.72	11.84	9.70
		BARLEY			
		GRAIN			
		(±2.45)			
17.6	31.8	34.9	38.9	36.1	31.9
		STRAW			
16.0	31.8	36.7	43.2	40.7	33.7
		SUGAR BEET			
		ROOTS			
		(±1.584)			
14.88	17.74	17.93	20.36	19.89	18.16
		TOPS			
		(±1.170)			
7.95	6.81	10.43	11.07	7.14	8.68

67/C/36.1

SPRING BEANS

(CJ)

Levels and placement of N - Long Hoos III 1967, the first year.

Design: 3 randomised blocks of 9 plots.

Area of each plot: 0.0202. Area harvested: 0.0127.

Treatments: No nitrogen (0) (3 plots per block) together with all combinations of:-

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 (N1), 2 (N2), 3 (N3) cwt N.

Basal applications: Manures: PK: 0.38 cwt P2O5, 0.38 cwt K2O. Weedkiller: Simazine at 1 lb in 32 gals. Insecticide: Demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals and at 12 fluid oz in 3 gals).

Cultivations, etc.: Ground chalk applied at 28 cwt: Sept 16 - 17, 1966. Ploughed: Sept 22. Ground chalk applied at 50 cwt: Jan 7, 1967. Ploughed second time: Jan 13. Seed drilled at 200 lb: Mar 17. Weedkiller applied: Mar 18. 'Nitro-Chalk' broadcast: Mar 22. Insecticide applied: June 14, July 11 (the second spray by fixed-wing aircraft). Combine harvested: Sept 1. Variety: Tarvin. Previous crops: Potatoes 1965, spring wheat 1966.

NOTE: Plant samples were taken for nodulation counts and grain samples for 1000 grain weight and % N.

Standard error per plot.
Grain: 1.34 or 3.7% (16 d.f.)

SUMMARY OF RESULTS

GRAIN

	O	B	P	Mean
		(±0.78)		(±0.55)
N1		36.8	35.1	36.0
N2		37.6	35.0	36.3
N3		37.7	35.7	36.7
Mean (±0.45)	35.8	37.4	35.3	36.1*

Mean D.M. %: 77.4

* General mean

67/C/37.1

WINTER WHEAT

(EB)

Chemical control of take-all (Ophiobolus graminis) - Claycroft 1967.

Design: 3 randomised blocks of 20 plots.

Area of each plot: 0.0040. Area harvested: 0.0021.

Treatments: None, 125 lb kaolin dust applied (O) - two plots per block, and all combinations of:-

1. Chemicals:

DAC 2787 (tetrachloroisophthalonitrile)	(A)
Du Pont 1823 (1,4-dichloro-2,5-dimethoxybenzene)	(B)
Triphenyltin chloride	(C)
'Cela A36'	(D)
1-phenyl-3-thiosemicarbazide	(E)
Triamiphos, (5-amino-1-(bisdimethylaminophosphinyl)-3-phenyl-1,2,4 triazole)	(F)

2. Rates of application in lb:

A	B	C	D	E	F	
2.5	1.25	0.25	0.5	1.25	0.9	(R1)
10.0	5.0	1.0	2.0	5.0	1.8	(R2)
40.0	20.0	4.0	8.0	20.0	3.6	(R3)

Treatments A to E were made up with kaolin dust to the standard quantity for application at 125 lb. Treatment F was applied as a wettable powder spray at 70 gals.

Basal applications: 340 lb (6:15:15) combine drilled. 1.2 cwt N as 'Nitro-Chalk' in spring. Weedkiller: Aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals.

Cultivations, etc.: Weedkiller applied: Sept 20, 1966. Ploughed: Oct 6. Treatments A to E and O applied: Oct 17. Seed drilled at 165 lb: Oct 27. Treatment F applied: Mar 7, 1967. Basal 'Nitro-Chalk' applied: Apr 19. Combine harvested: Aug 30. Variety: Cappelle. Previous crops: Barley 1965 and 1966.

NOTE: Samples were taken in May and July for the estimation of take-all (Ophiobolus graminis), eyespot (Cercosporella herpotrichoides), sharp eyespot (Rhizoctonia solani), and brown root rot.

Standard error per plot.
Grain: 3.29 or 7.9% (34 d.f.)

67/C/37.2

SUMMARY OF RESULTS

GRAIN

	A	B	C	D	E	F	Mean
			(±1.90)				(±0.77)
R1	42.1	43.5	39.8	41.5	42.5	42.5	42.0
R2	45.6	42.6	39.2	36.9	40.7	40.4	40.9
R3	41.6	40.1	42.1	41.5	45.0	42.8	42.2
Mean (±1.10)	43.1	42.1	40.4	40.0	42.7	41.9	41.7

O 43.1 (±1.34)

Mean D.M. % (all plots): 85.1

67/C/38.1

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, 1967.

Design: 3 randomised blocks of 15 plots.

Area of each plot: 0.0037. Area harvested: Mower scythe - 0.0014, cages and frames - 0.0002.

Treatments: All combinations of:-

1. Nitrogen: None (N0), 1.5 (N1), 3.0 (N2) cwt N as calcium nitrate (divided into 4 equal doses).
2. Simulated grazing (G) and hay-cutting (H) as follows (G+ = cuttings returned, G- = cuttings removed):-

	Period			
	1	2	3	4
Symbol	To May 8	To June 27	To Aug 31	To Oct 30
G+ H*	G+	H	G+	H
H G+*	H	G+	H	G+
G- H	G-	H	G-	H
H G-	H	G-	H	G-
H	H	H	H	H

* With cages and frames.

Grazing was simulated by cutting the grass with a rotary mower at intervals of 10-14 days. In addition a cage and a flat frame 1 yard square were placed on each plot of treatments G+ H and H G+. At the end of each period the grass enclosed by them was cut with shears. Yields from these cages (C) and frames (F) were compared with yields taken by motor scythe (A) from adjacent areas of the same plots. The cage and frame were moved to a different quarter on the plot for each sampling period.

Basal applications: As in previous years (0.6 cwt P_2O_5 as superphosphate, 2.2 cwt K_2O as sulphate of potash, 0.4 cwt Na_2O as sulphate of soda, 0.3 cwt MgO as sulphate of magnesia).

Cultivations, etc.: Basal P,K, Na and Mg applied: Jan 12, 1967. Calcium nitrate applied: Mar 3. G+ H and G- H plots cut: Apr 4 and 20, May 8. H G+, H G- and H plots cut for hay, calcium nitrate applied: May 8. H G- and H G+ plots cut: May 22, June 5, 15 and 27. G+ H, G- H and H plots cut for hay, calcium nitrate applied: June 27. G+ H and G- H plots cut: July 14 and 27, Aug 8 and 31. H G+, H G- and H plots cut for hay: Aug 31. Calcium nitrate applied: Sept 1. H G+ and H G- plots cut: Sept 15, Oct 2 and 30. G+ H, G- H and H plots cut for hay: Oct 30.

Standard errors per plot. Grass dry matter:

Mower scythe

1st Period (cuts 1-3):	1.59 or 14.9% (28 d.f.)
2nd Period (cuts 4-7):	2.79 or 8.8% (28 d.f.)
3rd Period (cuts 8-11):	2.96 or 11.4% (28 d.f.)
4th Period (cuts 12-14):	1.71 or 15.4% (28 d.f.)
Total of all 4 Periods (cuts 1-14):	5.43 or 6.8% (28 d.f.)

Mower scythe, cages and frames

1st Period (cuts 1-3):	Whole plot:	2.38 or 13.6% (10 d.f.)
	Sub plot:	2.46 or 14.0% (24 d.f.)
2nd Period (cuts 4-7):	Whole plot:	2.74 or 6.9% (10 d.f.)
	Sub plot:	3.31 or 8.3% (24 d.f.)
3rd Period (cuts 8-11):	Whole plot:	2.39 or 7.2% (10 d.f.)
	Sub plot:	2.38 or 7.2% (24 d.f.)
4th Period (cuts 12-14):	Whole plot:	2.09 or 15.4% (10 d.f.)
	Sub plot:	2.12 or 15.6% (24 d.f.)
Total of all 4 Periods (cuts 1-14):	Whole plot:	6.44 or 6.0% (10 d.f.)
	Sub plot:	5.22 or 4.9% (24 d.f.)

67/C/38.3

SUMMARY OF RESULTS

GRASS. DRY MATTER

MOWER SCYTHE

	HH	HG-	HG+	H-G	H+G	Mean
			1ST PERIOD (CUTS 1-3)			
			(±0.92)			(±0.41)
NO	6.5	7.8	6.0	3.0	1.6	5.0
N1	15.5	16.2	14.5	4.6	4.8	11.1
N2	18.6	22.8	19.8	9.6	8.0	15.8
Mean (±0.53)	13.5	15.6	13.4	5.8	4.8	10.6
			2ND PERIOD (CUTS 4-7)			
			(±1.61)			(±0.72)
NO	25.1	11.8	11.1	27.0	27.7	20.5
N1	41.5	18.4	23.2	40.8	42.3	33.2
N2	49.9	23.9	27.6	51.6	55.3	41.6
Mean (±0.93)	38.8	18.0	20.6	39.8	41.8	31.8
			3RD PERIOD (CUTS 8-11)			
			(±1.71)			(±0.76)
NO	21.2	21.9	22.2	14.0	12.8	18.4
N1	30.1	30.7	34.0	16.5	18.6	26.0
N2	36.6	40.8	43.5	22.6	24.0	33.5
Mean (±0.99)	29.3	31.1	33.3	17.7	18.5	26.0

67/c/38.4

GRASS. DRY MATTER

MOWER SCYTHE

	HH	HG-	HG+	H-G	H+G	Mean
	4TH PERIOD (CUTS 12-14)					
			(±0.99)			(±0.44)
NO	3.7	4.6	3.6	6.8	8.8	5.5
N1	13.1	7.6	6.1	12.9	17.9	11.5
N2	17.9	9.0	8.5	23.8	22.0	16.3
Mean (±0.57)	11.6	7.1	6.1	14.5	16.2	11.1
	TOTAL OF ALL 4 PERIODS (ALL CUTS)					
			(±3.13)			(±1.40)
NO	56.4	46.0	42.9	50.8	50.9	49.4
N1	100.2	72.9	77.8	74.8	83.6	81.9
N2	123.0	96.5	99.4	107.7	109.3	107.2
Mean (±1.81)	93.2	71.8	73.4	77.8	81.3	79.5

67/C/38.5

GRASS. DRY MATTER

MOWER SCYTHE, CAGES AND FRAMES

	A	C	F	Mean
		1ST PERIOD (CUTS 1-3)		
Mean (±0.58)	9.1	22.2	21.2	17.5
		(1) and (2)		(±0.97)
NO	3.8	14.7	13.3	10.6
N1	9.7	22.6	22.8	18.4
N2	13.9	29.3	27.5	23.6
		(3) and (4)		(±0.79)
HG+	13.4	21.1	19.6	18.0
G+H	4.8	23.4	22.8	17.0

(1) (±1.27) (3) (±1.04) For use in vertical and diagonal comparisons
(2) (±1.01) (4) (±0.82) For use in horizontal and interaction comparisons

		2ND PERIOD (CUTS 4-7)		
Mean (±0.78)	31.2	43.9	44.4	39.8
		(1) and (2)		(±1.12)
NO	19.4	31.2	30.8	27.1
N1	32.7	47.2	47.3	42.4
N2	41.4	53.4	55.1	50.0
		(3) and (4)		(±0.91)
HG+	20.6	42.2	43.4	35.4
G+H	41.8	45.6	45.4	44.3

(1) (±1.57) (3) (±1.28) For use in vertical and diagonal comparisons
(2) (±1.35) (4) (±1.10) For use in horizontal and interaction comparisons

67/C/38.6

GRASS. DRY MATTER

MOWER SCYTHE, CAGES AND FRAMES

	A	C	F	Mean
	3RD PERIOD (CUTS 8-11)			
Mean (±0.56)	25.9	36.4	36.9	33.1
	(1) and (2)			(±0.98)
N0	17.5	28.9	26.7	24.3
N1	26.3	38.2	40.2	34.9
N2	33.8	42.2	44.0	40.0
	(3) and (4)			(±0.80)
HG+	33.3	37.6	39.0	36.6
G+H	18.5	35.2	34.9	29.5

(1) (±1.26) (3) (±1.03) For use in vertical and diagonal comparisons
(2) (±0.97) (4) (±0.79) For use in horizontal and interaction comparisons

	4TH PERIOD (CUTS 12-14)			
Mean (±0.50)	3.5	19.3	18.0	13.6
	(1) and (2)			(±0.85)
N0	2.1	15.6	13.6	10.4
N1	3.6	18.5	17.2	13.1
N2	4.9	23.9	23.4	17.4
	(3) and (4)			(±0.70)
HG+	6.1	17.0	14.9	12.6
G+H	1.0	21.7	21.2	14.6

(1) (±1.11) (3) (±0.91) For use in vertical and diagonal comparisons
(2) (±0.87) (4) (±0.71) For use in horizontal and interaction comparison

67/C/38.7

GRASS. DRY MATTER

MOWER SCYTHE, CAGES AND FRAMES

	A	C	F	Mean
	TOTAL OF ALL PERIODS (ALL CUTS)			
Mean (±1.23)	77.3	121.9	120.6	106.6
		(1) and (2)		(±2.63)
NO	46.9	90.3	84.5	73.9
N1	80.7	126.5	127.4	111.5
N2	104.3	148.8	150.0	134.4
		(3) and (4)		(±2.15)
HG+	73.4	117.9	116.9	102.7
G+H	81.3	125.8	124.4	110.5

(1) (±3.15) (3) (±2.58) For use in vertical and diagonal comparisons
(2) (±2.13) (4) (±1.74) For use in horizontal and interaction comparisons

67/C/39

SPRING BEANS

(WCL)

Levels of N for beans followed by wheat Woburn Lansome N.W. 1967, the first year.

Design: 3 blocks of 4 plots.

Area of each plot: 0.0242. Area harvested: 0.0121.

Treatments:
1. Levels of N: None (N0), 1.0 (N1), 2.0 (N2), 3.0 cwt N (N3) as 'Nitro-Chalk'.

Basal applications: 360 lb (0:14:28). Weedkiller: Simazine at 0.75 lb in 30 gals. Insecticide: Demeton-s-methyl twice, first by tractor sprayer, metasystox at 12 fluid oz in 30 gals - second by fixed-wing aircraft, metasystox at 12 fluid oz in 2.5 gals.

Cultivations, etc.: Ploughed: Oct 20, 1966. Ground chalk applied at 56 cwt: Jan 4, 1967. Deep-tine cultivated: Feb 3. 'Nitro-Chalk' applied, PK fertilizer applied, seed drilled at 200 lb: Feb 15. Weedkiller applied: Feb 24. Insecticide applied: June 9 and July 13. Combine harvested: Aug 24. Variety: Tarvin. Previous crops: Fallow 1965, barley 1966.

NOTE: Samples were taken for nodule counts, 1000-corn weight and percentage nitrogen.

Standard error per plot.
Grain: 5.26 or 18.4% (6 d.f.)

SUMMARY OF RESULTS

GRAIN

N0	N1	N2	N3	Mean
	(±3.03)			
27.8	30.3	30.2	26.1	28.6

Mean D.M. %: 81.2

67/C/40.1

PLOUGHSOLE D-D

(WCM)

The effect of 'D-D' (dichloropropane-dichloropropene) in the control of Trichodorus and Longidorus in sugar beet - Woburn Butt Furlong 1967.

Design: 6 randomised blocks of 4 plots, split into 3 for N.

Area of each sub plot: 0.0064. Area harvested: 0.0032.

Treatments: All combinations of:-
Whole plots: D-D: None (D0), 65 (D1), 140 (D2), 250 lb D-D (dichloropropane-dichloropropene) (D3).
Sub plots: Nitrogen: 0.6 (N1), 1.2 (N2), 1.8 cwt N (N3) as 'Nitro-Chalk'.

Basal applications: 360 lb (0:14:28). Salt: 4 cwt. Insecticide: Demeton-s-methyl at 3.12 fl oz in 30 gals on two occasions.

Cultivations, etc.: Ploughed with D-D applications: Jan 13 - 15, 1967. Salt applied: Feb 6. PK fertiliser applied: Mar 17. 'Nitro-Chalk' applied: Mar 28. Seed drilled at 5 lb: Mar 30. Singled: May 18 - 19. Insecticide applied: June 9, July 10. Lifted: Oct 12. Variety: Klein E. Previous crops: Carrots and sugar beet 1966, barley 1965.

NOTE: Samples were taken monthly from May to October for nematode counts.

Standard errors per plot.

Roots (washed),	Whole plot:	1.229 or 12.8% (15 d.f.)
	Sub plot:	1.395 or 14.6% (40 d.f.)
Total sugar,	Whole plot:	3.79 or 13.7% (15 d.f.)
	Sub plot:	4.72 or 17.1% (40 d.f.)
Tops,	Whole plot:	1.531 or 13.1% (15 d.f.)
	Sub plot:	1.328 or 11.4% (40 d.f.)

SUMMARY OF RESULTS

	N1	N2	N3	Mean
	ROOTS (WASHED)			
	(1) and (2)			(±0.502)
D0	7.27	8.14	8.68	8.03
D1	9.03	9.34	10.38	9.58
D2	9.77	11.61	10.53	10.64
D3	9.11	10.12	10.82	10.02
Mean (±0.285)	8.79	9.80	10.11	9.57

(1) (±0.684) For use in vertical and diagonal comparisons
(2) (±0.569) For use in horizontal and interaction comparisons

	SUGAR %			
D0	14.5	14.3	13.9	14.2
D1	14.8	14.3	13.9	14.4
D2	14.6	14.5	13.9	14.3
D3	14.6	14.2	13.8	14.2
Mean	14.7	14.3	13.9	14.3

	N1	N2	N3	Mean
		TOTAL SUGAR		
		(1) and (2)		(±1.55)
D0	21.3	23.6	24.3	23.1
D1	27.3	27.1	29.1	27.8
D2	28.8	34.1	29.5	30.8
D3	27.0	28.9	30.1	28.7
Mean (±0.96)	26.1	28.4	28.3	27.6

(1) (±2.21) For use in vertical and diagonal comparisons
(2) (±1.93) For use in horizontal and interaction comparisons

		TOPS		
		(1) and (2)		(±0.625)
D0	8.26	10.26	12.45	10.33
D1	9.89	11.09	15.07	12.02
D2	10.07	13.33	13.87	12.42
D3	9.65	12.22	13.71	11.86
Mean (±0.271)	9.47	11.73	13.77	11.66

(1) (±0.766) For use in vertical and diagonal comparisons
(2) (±0.542) For use in horizontal and interaction comparisons

67/C/40.4

	N1	N2	N3	Mean
		PLANT NUMBER		
D0	60.1	60.6	59.0	59.9
D1	58.2	58.4	57.7	58.1
D2	57.7	61.1	56.7	58.5
D3	56.2	56.3	57.8	56.7
Mean	58.1	59.1	57.8	58.3

67/C/41.1

CEREAL CYST - NEMATODE

(WECG)

The effect of cereal cyst-nematode (Heterodera avenae) on the yield of spring wheat and barley - Butt Close 1967.

Design: (Each crop) 3 blocks of 5 split into 3. Blocks arranged in pairs, one of each crop.

Area of each sub plot: 0.0032. Area harvested: 0.0021.

Treatments: All combinations of:-

Whole plots: 1. Oats 1966: Under oats till harvest - (C,D,E) (3 plots per block). Oats rotary cultivated May 26 and then bare fallowed (A). Oats rotary cultivated May 26, bare fallowed, injected with D-D at 400 lb Dec 19, 1966 (B).

Sub plots: 2. Nitrogen to wheat 1967: 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt N as 'Nitro-Chalk'.

3. Nitrogen to barley 1967: 0.4 (N1), 0.8 (N2), 1.2 (N3) cwt N as 'Nitro-Chalk'.

Basal application: Oats 1966: 2 cwt (21:14:14) combine drilled. Weedkiller. Ioxynil/mecoprop (Actril C at 5 pints in 35 gals). Wheat and barley 1967: 280 lb (0:20:20). Weedkiller: Amino-triazole at 4 lb plus ammonium thiocyanate at 3.7 lb in 33 gals.

Cultivations, etc.:-

Oats 1966: Ploughed: 15 - 23 Nov, 1965. Seed combine drilled at 170 lb: Mar 9, 1966. Weedkiller applied: May 13. A and B plots rotary cultivated: May 26, Aug 18. Combine harvested: Sept 12. Variety: Condor. Previous crops: Barley 1964, carrots, kale, cabbage, 1965.

Wheat and barley 1967: Weedkiller applied: Sept 27, 1966. Ground chalk applied at 20 cwt: Oct 31. Ploughed: Nov 2. DD applied to B plots: Dec 19. Seed combine drilled, wheat at 170 lb, barley at 140 lb: Mar 6, 1967. 'Nitro-Chalk' applied: Mar 13. Combine harvested: Aug 23. Varieties: Wheat - Kloka, barley - Maris Badger.

NOTE: Soil samples were taken for nematode counts on June 5.

Standard errors per plot. Grain:

Spring wheat.	Whole plot:	2.64 or 7.2% (8 d.f.)
	Sub plot:	4.58 or 12.6% (20 d.f.)
Barley.	Whole plot:	2.22 or 6.3% (8 d.f.)
	Sub plot:	3.22 or 9.1% (20 d.f.)

SUMMARY OF RESULTS

GRAIN

	A	B	C	D	E	Mean
	SPRING WHEAT					
	(1) and (2)					(±1.18)
N1	35.3	42.2	32.7	34.5	31.4	35.2
N2	37.2	42.1	42.0	34.2	33.6	37.8
N3	38.1	38.9	35.2	34.5	33.9	36.1
Mean (±1.52)	36.9	41.1	36.6	34.4	33.0	36.4

Mean D.M. %: 83.8

(1) (±2.64) For use in horizontal and diagonal comparisons
(2) (±2.64) For use in vertical and interaction comparisons

	BARLEY					
	(1) and (2)					(±0.83)
N1	33.5	36.3	28.3	24.8	25.7	29.7
N2	38.6	34.5	38.5	39.7	36.3	37.5
N3	37.4	41.0	37.5	37.4	38.7	38.4
Mean (±1.28)	36.5	37.3	34.8	33.9	33.6	35.2

Mean D.M. %: 83.5

(1) (±1.99) For use in horizontal and diagonal comparisons
(2) (±1.86) For use in vertical and interaction comparisons

67/C/42.1

NEMATODE - RESISTANT BARLEY

(on site of 'Scorch' study)

(WEC)

Effect of using resistant and susceptible segregates of barley on land heavily infested with Heterodera avenae and the effect on yields - Woburn Butt Close 1967.

Design: Single replicate of 3 x 2 x 2 x 2 x 2 in blocks of 12 plots, with certain high order interactions confounded with block differences.

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 - 66)
2. Formalin 1964: None (0) Formalin (F64)
3. Formalin 1965: None (0) Formalin (F65)
4. Formalin 1966: None (0) Formalin (F66)
5. Varieties: Resistant segregate (R), susceptible segregate (S).

Basal applications: 20 cwt ground chalk 250 lb (0:20:20). Weedkillers: 4 lb amino-triazole plus 3.7 lb ammonium thiocyanate in 33 gals and ioxynil/mecoprop (Actril C at 5 pints in 50 gals).

Cultivations, etc.: Weedkiller applied: Sept 27, 1966. Ground chalk applied: Oct 31. Ploughed: Nov 2. PK compound applied by machine, 'Nitro-Chalk' applied by hand, seed drilled at 140 lb: Mar 15, 1967. Weedkiller (Actril C) applied: May 25. Combine harvested: Aug 23.

NOTES (1) Crop samples for nematode counts and plant weights were taken in late May and early July.
(2) Soil samples taken after harvest for nematode population counts.
(3) For previous years' results see 'Results' 64/Da/3, 65/C/30 and 66/C/23.

Standard error per plot.
Grain: 5.19 or 24.5% (11 d.f.)

67/C/42.2

SUMMARY OF RESULTS

GRAIN

	R	S	Mean
Mean (±1.06)	20.7	21.8	21.2
	(±1.84)		(±1.30)
N1	14.7	14.6	14.7
N2	21.1	22.1	21.6
N3	26.2	28.6	27.4
	(±1.50)		(±1.06)
O	20.2	21.7	21.0
F64	21.1	21.8	21.5
	(±1.50)		(±1.06)
O	19.6	22.3	20.9
F65	21.7	21.3	21.5
	(±1.50)		(±1.06)
O	21.5	22.6	22.0
F66	19.8	20.9	20.4

Mean D.M. %: 80.0

67/C/43.1

NEMATODE - RESISTANT BARLEY

(WEAU)

Effect of using resistant and susceptible segregates of barley and Proctor on land lightly infested with Heterodera avenae and the effect on yields - Woburn Butt Close 1967.

Design: 3 randomised blocks of 9 plots.

Area of each plot: 0.0032. Area harvested: 0.0021.

Treatments: 1. Varieties: Resistant segregate (R), susceptible segregate (S), Proctor (P).
2. Nitrogen: 0.4 (N1), 0.8 (N2), 1.2 cwt N (N3) as 'Nitro-Chalk'.

Basal application: 20 cwt ground chalk 250 lb (0:20:20). Weedkillers: 4 lb amino-triazole plus 3.7 lb ammonium thiocyanate in 33 gals and ioxynil/mecoprop (Actril C at 5 pints in 50 gals).

Cultivations, etc.: Weedkiller applied: Sept 27, 1966. Ground chalk applied: Oct 31. Ploughed: Nov 2. PK compound applied by machine, 'Nitro-Chalk' applied by hand, seed drilled at 140 lb: Mar 15, 1967. Weedkiller (Actril C) applied: May 25. Combine harvested: Aug 23. Previous crops: Spring wheat 1965, potatoes 1966.

NOTE: Root samples for nematode counts were taken in late May and early June, and soil samples were taken before drilling.

Standard error per plot.
Grain: 8.21 or 30.9% (16 d.f.)

67/C/43.2

SUMMARY OF RESULTS

GRAIN

	N1	N2	N3	Mean
		(±4.74)		(±2.74)
R	16.8	27.7	27.3	23.9
S	23.6	27.4	38.3	29.8
P	20.2	24.9	32.9	26.0
Mean (±2.74)	20.2	26.7	32.8	26.6

Mean D.M. %: 79.4

BARLEY

(SAX/B/1)

Formalin, nitrogen and lime for barley, Saxmundham, Grove Plot, 1967, the first year.

Design: A single replicate of 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: None (O), formalin at 532 gals in 2900 gals (F).
2. Nitrogen: 0.6 (N1), 1.2 (N2) cwt N as calcium nitrate.
3. Time of application of nitrogen: Early (E), late (L).
4. Lime: None (O), 7.5 tons of ground chalk (C).
5. Variety: Deba Abed (A), Maris Badger (B).

Additional plots: One of Deba Abed (A), one of Maris Badger (B), each with no formalin, nitrogen or lime.

Basal applications: 0.5 cwt P_2O_5, 0.5 cwt K_2O as (0:20:20).
Weedkiller: 2,4-DP/MCPA (Cornox RK Extra at 6 pints in 50 gals).

Cultivations, etc.: Ploughed: Nov 29 - Dec 16, 1966.
Formalin applied: Feb 7, 1967. Basal PK and first dressing of ground chalk (5 tons) applied: Feb 8. Calcium nitrate (E treatment) and second dressing of ground chalk (2.5 tons) applied, seed drilled at 160 lb: Mar 21. Calcium nitrate (L treatment) and weedkiller applied: May 11. Harvested by hand: Aug 15.

NOTE: Soil samples were taken for N determination before sowing.

Standard error per plot.
Grain: 2.71 or 6.9% (5 d.f.)

SUMMARY OF RESULTS

GRAIN

	N1	N2	E	L	O	C	A	B	Mean
	(±0.96)		(±0.96)		(±0.96)		(±0.96)		(±0.68)
O	36.0	40.9	35.1	41.8	38.8	38.1	39.7	37.3	38.5
F	39.8	40.5	37.5	42.8	39.4	40.9	41.9	38.5	40.2
			(±0.96)		(±0.96)		(±0.96)		(±0.68)
		N1	31.6	44.2	37.4	38.5	38.1	37.7	37.9
		N2	41.0	40.4	40.8	40.6	43.4	38.0	40.7
					(±0.96)		(±0.96)		(±0.68)
				E	35.8	36.9	37.0	35.7	36.3
				L	42.4	42.2	44.6	40.0	42.3
							(±0.96)		(±0.68)
						O	40.6	37.6	39.1
						C	40.9	38.1	39.5
Mean (±0.68)							40.8	37.9	39.3

Additional plots

A	B
16.1	27.7

General mean: 37.4
Mean D.M. %: 79.1

67/C/4.3

STRAW

	N1	N2	E	L	O	C	A	B	Mean
O	35.9	44.3	35.7	44.5	40.6	39.6	36.9	43.4	40.1
F	40.4	45.0	38.8	46.6	41.3	44.1	40.4	44.9	42.7
		N1	31.4	44.9	37.6	38.7	34.5	41.8	38.1
		N2	43.0	46.3	44.2	45.1	42.8	46.6	44.7
				E	37.3	37.1	33.7	40.7	37.2
				L	44.5	46.7	43.5	47.6	45.6
						O	37.7	44.2	40.9
						C	39.6	44.1	41.9
Mean							38.6	44.2	41.4

Additional plots

A	B
13.5	28.5

General mean: 39.1
Mean D.M. %: 74.9

67/C/45.1

RED CLOVER

(Sax/RC1/1)

Phosphate and potash, Saxmundham, Victor's Plot 1967, the first year.

Design: 4 randomised blocks of 4 plots.

Area of each plot: 0.0018. Area harvested: 1st cut - 0.0014, 2nd cut - 0.0012.

Treatments: All combinations of:-
1. Phosphate: 0.5 cwt (P1), 2.0 cwt (P4) P_2O_5 as triple superphosphate.
2. Potash: None (K0), 2.0 cwt (K1) K_2O as muriate of potash.

Basal applications: None.

Cultivations, etc.:- Ploughed: Sept 22, 1966. Fertilisers applied: Mar 8, 1967. Seed sown at 26 lb: Mar 22. Cut twice: July 13 and Sept 7. Variety: Dorset Marl Red Clover. Previous crops: Barley 1965, winter wheat 1966.

Standard errors per plot. Dry matter:

1st cut:	1.88 or 7.8% (9 d.f.)
2nd cut:	2.54 or 9.4% (9 d.f.)
Total of 2 cuts:	2.71 or 5.3% (9 d.f.)

SUMMARY OF RESULTS

	K0	K1	Mean
	1ST CUT		
	(±0.94)		(±0.67)
P1	21.5	24.0	22.7
P4	24.4	26.6	25.5
Mean (±0.67)	22.9	25.3	24.1
	2ND CUT		
	(±1.27)		(±0.90)
P1	24.1	26.8	25.5
P4	26.5	30.2	28.4
Mean (±0.90)	25.3	28.5	26.9
	TOTAL OF 2 CUTS		
	(±1.36)		(±0.96)
P1	45.6	50.8	48.2
P4	50.9	56.8	53.8
Mean (±0.96)	48.2	53.8	51.0

Mean D.M. %: 1st cut: 26.5
2nd cut: 22.7
Total of 2 cuts: 24.6

67/C/46.1

LUCERNE

(SAX/Lu/1)

Phosphate and potash, Saxmundham, Victor's Plot, 1967, the first year.

Design: 4 randomised blocks of 4 plots.

Area of each plot: 0.0018. Area harvested: 1st cut - 0.0014, 2nd cut - 0.0012.

Treatments: All combinations of:-
1. Phosphate: 0.5 cwt (P1), 2.0 cwt (P4) P2O5 as triple superphosphate.
2. Potash: None (K0), 2.0 cwt (K1) K2O as muriate of potash.

Basal applications: None.

Cultivations, etc.: Ploughed: Sept 22, 1966. Fertilisers applied: Mar 8, 1967. Seed sown at 24 lb: Mar 22. Cut twice: July 13 and Sept 7. Variety: Europe (inoculated). Previous crops: Barley 1965, winter wheat 1966.

NOTE: One plot (P1 K2) was damaged by animals. An estimated value was used in the analysis.

Standard errors per plot. Dry matter:

1st cut:	1.76	or 6.3% (8 d.f.)*
2nd cut:	1.35	or 5.9% (8 d.f.)*
Total of 2 cuts:	2.52	or 5.0% (8 d.f.)*

* 1 estimated value

SUMMARY OF RESULTS

DRY MATTER

	K0	K1	Mean
		1ST CUT	
	(±0.88)		(±0.62)
P1	25.2	27.3	26.3
P4	28.2	30.5	29.3
Mean (±0.62)	26.7	28.9	27.8
		2ND CUT	
	(±0.67)		(±0.48)
P1	21.6	23.3	22.5
P4	22.2	24.3	23.2
Mean (±0.48)	21.9	23.8	22.9
		TOTAL OF 2 CUTS	
	(±1.26)		(±0.89)
P1	46.8	50.7	48.7
P4	50.4	54.8	52.6
Mean (±0.89)	48.6	52.7	50.7

Mean D.M. %: 1st cut: 33.2
2nd cut: 28.6
Total of 2 cuts: 30.9

67/C/47.1

GRASS

(SAX/G/1)

N and cutting, Saxmundham Grove Plot 1967, the first year.

Design: 4 randomised blocks of 9 plots.

Area of each plot: 0.0018. Area harvested: 0.0013.

Treatments:- (N as 'Nitro-Chalk').

	Total N (cwt)	No. of N dressings	No. of cuts
1	0.0	0	2
2	1.0	2	2
3	2.0	2	2
4	3.0	2	2
5	4.0	2	2
6	1.5	3	3
7	3.0	3	3
8	2.0	2	3
9	4.0	2	3

Basal applications: 1.0 cwt P_2O_5, 2.0 cwt K_2O as (0:10:20).

Seeds mixture lb per acre

S352 Early Timothy	95 lb
S215 Meadow Fescue	95 lb

Cultivations, etc.: Ploughed: Nov 29 - Dec 16, 1966. Basal PK applied: Mar 8, 1967. First N treatments applied, seed sown: Mar 22. 2nd and 3rd N treatments applied: June 28 and July 18. Cut plots with 2 cuts: July 18 and Sept 26, plots with 3 cuts: June 28, Aug 15, Sept 26. Previous crops: Barley 1965, fallow 1966.

Standard error per plot. Dry matter:
Total of all cuts: 3.80 or 7.0% (24 d.f.)

67/C/47.2

SUMMARY OF RESULTS

DRY MATTER. TOTAL OF ALL CUTS

1	2	3	4	5	6	7	8	9	Mean
				(±1.90)					
24.1	49.2	57.2	61.9	67.6	48.6	61.7	51.4	64.7	54.0

Mean D.M. %: 2 cut plots: 26.0
3 cut plots: 20.7

67/Da/1.1

WINTER WHEAT

(RW 101)

Wheat bulb fly - seed rates and methods of sowing - Stackyard 1967.

Design: 6 randomised blocks of 4 plots.

Area of each plot: 0.0193. Area harvested: 0.0138.

Treatments: All combinations of:-
1. Sowing methods: Broadcast by drill (B), drilled (D).
2. Seed rates: 65 lb (R1), 183 (R3).

Basal applications: 280 lb (6:15:15) broadcast by drill. 0.84 cwt N as 'Nitro-Chalk' in spring. Weedkiller: Ioxynil/mecoprop (Actril C at 6 pints in 20 gals).

Cultivations, etc.: Rotary cultivated: Mar 30 and May 19, 1966. Deep-tine cultivated: June 9. Rotary cultivated: July 1. Seed sown, NPK basal compound applied: Nov 4. 'Nitro-Chalk' applied: Apr 18, 1967. Sprayed: May 9. Combine harvested: Aug 30. Variety: Cappelle. Previous crops: Winter wheat 1965, fallow 1966.

NOTE: Samples were taken from late February until mid-May to estimate numbers of plants, shoots, larvae and pupae and damaged plants and shoots.

Standard error per plot.
Grain: 3.45 or 10.2% (13 d.f.)

67/Da/1.2

SUMMARY OF RESULTS

GRAIN

	R1	R3	Mean
	(±1.41)		(±1.00)
B	29.5	41.0	35.3
D	20.8	43.5	32.1
Mean (±1.00)	25.2	42.2	33.7

Mean D.M. %: 84.7

67/Da/2.1

WINTER WHEAT

(RW 201)

CCC and eyespot - Claycroft 1967.

Design: 4 x 4 Latin square.

Area of each plot: 0.0202. Area harvested: 0.0104.

Treatments: No chlormequat (O)
Sprayed with chlormequat* at 2.5 lb in 37 gals:-
Early (at 3 leaf stage) (E)
At 5 leaf stage (M)
Late (at shooting stage) (L)

* 2-chloroethyltrimethylammonium chloride, formerly described as CCC.

Basal applications: 410 lb (6:15:15) combine drilled, 1.2 cwt N as 'Nitro-Chalk' in spring.

Cultivations, etc.: Ploughed: Oct 6, 1966. Seed drilled at 180 lb: Oct 28. Chlormequat applied: E - Feb 6, 1967 and M - Mar 21. 'Nitro-Chalk' applied: Apr 19. Chlormequat applied: L - Apr 26. Combine harvested: Aug 31. Variety: Champlein. Previous crops: Barley 1965 and 1966.

NOTE: Samples were taken on 29th June for estimation of eyespot (Cercosporella herpotrichoides).

Standard error per plot.
Grain: 2.45 or 4.2% (15 d.f.)

67/Da/2.2

SUMMARY OF RESULTS

GRAIN

O	E	M	L	Mean
54.9	60.4	58.0	58.6	58.0

(±1.23)

Mean D.M. %: 83.2

67/Da/3.1

WINTER WHEAT

(RW 301)

Effects of CCC - Long Hoos V 1967.

Design: 4 blocks of 8 plots, randomisation restricted.

Area of each plot: 0.0241. Area harvested: 0.0014.

Treatments: All combinations of:-
1. Chlormequat*: No spray (CO), 2.5 lb in 40 gals (CS) in spring.
2. Nitrogen: None (N0), 0.8 (N1), 1.6 (N2), 2.4 (N3) cwt N as 'Nitro-Chalk'.

* 2-chloroethyltrimethylammonium chloride, formerly called CCC.

NOTE: (1) A wetter was included in the CCC spray.

Basal applications: 340 lb (0:20:20) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 6 pints in 32 gals). Seed dressed with ethion against wheat bulb fly.

Cultivations, etc.: Ploughed: Sept 13, 1966. Seed drilled at 210 lb: Oct 27. Chlormequat applied: Mar 21. 'Nitro-Chalk' applied: Apr 18. Sprayed (Weedkiller): Apr 26. Combine harvested: Aug 31. Variety: Cappelle. Previous crops: Winter beans 1965, fallow 1966.

NOTE: (2) Crop samples were taken at intervals after the ears emerged to determine leaf area. Counts of shoots were made from time to time.

Standard error per plot.
Grain: 2.29 or 5.1% (21 d.f.)

67/Da/3.2

SUMMARY OF RESULTS

GRAIN

	N0	N1	N2	N3	Mean
			(±1.15)		(±0.57)
CO	41.5	48.1	44.9	43.2	44.4
CS	46.4	48.7	45.5	43.6	46.0
Mean (±0.81)	43.9	48.4	45.2	43.4	45.2

Mean D.M. %: 85.0

67/Da/4.1

WINTER WHEAT

(RW 401)

Spun and drilled seed, and cultivations - Long Hoos IV 1967.

Design: 2 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: Plough, spring-tine cultivate twice, sow, harrow (C1). Plough, spring-tine cultivate, sow, spring-tine cultivate, harrow (C2). Plough, spring-tine cultivate twice, harrow, sow, harrow (C3). Plough, sow, spring-tine cultivate twice, harrow (C4).

Drilled seed: All combinations of:-

Whole plots: 1. Seed rate: 150 lb (L), 190 lb (M).

Sub plots: 2. Seedbed cultivations: C1, C3 as above (duplicate treatments in each case).

Basal applications: 220 lb (0:20:20), 0.84 cwt N as 'Nitro-Chalk' as a top dressing. Weedkiller: Ioxynil/mecoprop (Actril C at 6 pints in 32 gals).

Cultivations, etc.: Ploughed: Sept 26, 1966. Basal PK compound applied: Oct 28. Seed sown: Nov 1. 'Nitro-Chalk' applied: Apr 5, 1967. Sprayed: Apr 29. Combine harvested: Aug 31. Variety: Cappelle. Previous crops: Winter wheat 1965, spring beans 1966.

Standard errors per plot. Grain:

Whole plot: 1.94 or 4.2% (6 d.f.)

Sub plot: 1.58 or 3.4% (40 d.f.)

67/Da/4.2

SUMMARY OF RESULTS

GRAIN

SPUN SEED

	C1	C2	C3	C4	Mean
	(1) and (2)				(±0.97)
M	46.9	46.8	48.1	46.7	47.1
H	43.1	42.2	42.7	45.6	43.4
Mean (±0.56)	45.0	44.5	45.4	46.1	45.2

DRILLED SEED

	C1	C3	Mean
	(3) and (4)		(±0.97)
L	48.1	47.6	47.8
M	47.5	47.4	47.4
Mean (±0.39)	47.8	47.5	47.6

(1) (±1.18) (3) (±1.05) For use in vertical and diagonal comparisons
(2) (±0.79) (4) (±0.56) For use in horizontal and interaction comparisons

Pooled mean: 46.4
Pooled mean D.M. %: 85.1

67/Da/5.1

SPRING WHEAT

(RW 501)

Comparison of combines - Fosters West Side 1967.

Design: 8 randomised blocks of 6 plots, with N levels applied to blocks. For plot length harvested plots are either whole, halved or quartered.

Area of each plot:		Area harvested:
Whole plots:		
Small combine:	0.0110	0.0043
Large combine:	0.0221	0.0086
Half plots:		
Small combine:	0.0055	0.0021
Large combine:	0.0110	0.0043
Quarter plots:		
Small combine:	0.0028	0.0011
Large combine:	0.0055	0.0021

Treatments: All combinations of:-

To blocks: 1. Nitrogen: 0.6 (N1), 1.2 (N2) cwt N as basal compound plus 'Nitro-Chalk'.

To plots: 2. Combine harvesters: PAM 150S cutting 8 rows (4'8''), Clayson M103 cutting 16 rows (9'4''), between blank rows.

3. Length harvested: 40 feet (whole plot), 2 x 20 feet (half plots), 4 x 10 feet (quarter plots).

Basal applications: 270 lb (25:10:10) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Cultivations, etc.: Ground chalk applied at 23 cwt: Dec 5, 1966. Ploughed: Jan 12, 1967. Seed drilled at 174 lb: Mar 15. 'Nitro-Chalk' applied: Mar 21. Sprayed: May 12. Combine harvested: Aug 24. Variety: Kloka. Previous crops: Barley 1965, potatoes 1966.

67/Da/5.2

SUMMARY OF RESULTS

GRAIN

Combine Harvester	N1 Whole plot	N1 Half plot	N1 Quarter plot	N2 Whole plot	N2 Half plot	N2 Quarter plot	N2 Mean
PAM 150S	45.3	42.6	43.1	49.7	48.1	45.1	45.6
CLAYSON M103	46.4	45.9	45.8	50.0	49.2	47.8	47.5

Mean D.M. %: 81.5

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67/Da/6

SPRING WHEAT

(RW 601)

Effect of gaps - Little Hoos 1967.

Design: 5 x 5 Latin square.

Area of each plot: 0.0120. Area harvested: 0.0121.

Treatments: (each plot 17'6'' wide, i.e. nominally 30 rows at 7'' spacing, paths 1 foot wide between plots. The full width was harvested for yield).

No rows missing, 30 rows harvested	(G0)
8 rows missing, 11(8)11 harvested	(G8)
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)

Note: (8) etc. indicate number of blank rows.

Basal applications: 340 lb (25:10:10) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Cultivations, etc.: Deep-tine cultivated: Nov 12 and 17, 1966. Seed drilled at 175 lb: Mar 15, 1967. Weedkiller applied: May 12. Combine harvested: Aug 23. Variety: Kloka. Previous crops: Fallow 1965, potatoes 1966.

Standard error per plot.
Grain: 1.31 or 3.1% (10 d.f.)*

* 2 estimated values

SUMMARY OF RESULTS

GRAIN

	G0	G8	G4	G2	G1	Mean
Mean (±0.59)	47.6	37.3	38.0	41.9	44.2	41.8

Mean D.M. %: 83.3

67/Da/7.1

SPRING WHEAT

(RW 701)

Effects of CCC - Long Hoos V 1967.

Design: 4 blocks of 8 plots, randomisation restricted.

Area of each plot: 0.0193. Area harvested: 0.0111.

Treatments: All combinations of:-
1. Chlormequat*: No spray (C0), 2.5 lb in 40 gals (C5) in spring at 5 leaf stage.
2. Nitrogen: None (N0), 0.8 (N1), 1.6 (N2), 2.4 (N3) cwt N as 'Nitro-Chalk'.

* 2-chloroethyltrimethylammonium chloride formerly called CCC.

NOTE: (1) A wetter was included in the CCC spray.

Basal applications: 340 lb (0:20:20) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 5 pints in 20 gals).

Cultivations, etc.: Ploughed: Sept 26, 1966. Seed drilled at 175 lb: Mar 14, 1967. 'Nitro-Chalk' applied: Mar 28. Sprayed (weedkiller): May 12. Sprayed with chlormequat: May 31. Combine harvested: Aug 24. Variety: Kloka. Previous crops: Winter beans 1965, fallow 1966.

NOTE: (2) Crop samples were taken at intervals after the ears emerged to determine leaf area. Counts of shoots were made from time to time.

Standard error per plot.
Grain: 4.00 or 8.9% (21 d.f.)

SUMMARY OF RESULTS

GRAIN

	N0	N1	N2	N3	Mean
		(±2.00)			(±1.00)
CO	36.9	48.3	50.2	48.0	45.8
CS	34.4	47.7	46.8	47.7	44.1
Mean (±1.42)	35.6	48.0	48.5	47.9	45.0

Mean D.M. %: 79.7

67/Da/8.1

SPRING WHEAT

(RW801 and WW301)

Anhydrous ammonia as a fertiliser - Rothamsted (R), Great Knott I and Woburn (W) Great Hill S.W. 1967.

Design: 4 randomised blocks of 8 plots.

Area of each plot: 0.0321. Area harvested: 0.0213.

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 (N0), with (N0I), the injector running idle through the soil.

Basal applications:

Great Knott I (R): 40 cwt ground chalk, 250 lb (0:20:20) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals).

Great Hill S.W. (W): 40 cwt ground chalk, 280 lb (0:20:20) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 5 pints in 35 gals).

Cultivations, etc.:

Great Knott I (R): Ground chalk applied: Nov 11, 1966. Ploughed: Sept 28. Anhydrous ammonia injected: Mar 8, 1967. 'Nitro-Chalk' applied, seed drilled at 185 lb: Mar 14. Weedkiller applied: May 11. Combine harvested: Aug 24. Variety: Kloka. Previous crops: Potatoes 1965, winter wheat 1966.

Great Hill S.W. (W): Ground chalk applied: Nov 3, 1966. Deep-tine cultivated: Feb 3, 1967. Anhydrous ammonia injected: Mar 8. 'Nitro-Chalk' applied: Mar 13. Seed drilled at 170 lb: Mar 14. Weedkiller applied: May 3. Combine harvested: Aug 22. Variety: Kloka. Previous crops: Barley 1965, potatoes 1966.

NOTES: (1) Green crop samples were taken on 28th June, for yield and N content.

(2) Owing to a failure of the injector little ammonia was injected into plot WW326 - IN2. An estimated value was used in the analysis.

Standard errors per plot (estimated from plots receiving N). Grain:

Great Knott I (R): 2.28 or 6.9% (15 d.f.)

Great Hill S.W (W): 4.51 or 13.6% (14 d.f.)*

* 1 estimated value.

67/Da/8.2

SUMMARY OF RESULTS

GREAT KNOTT I (R)

GRAIN

	N1	N2	N3	Mean
		(±1.14)		(±0.66)
B	28.5	35.4	36.3	33.4
I	26.8	32.5	38.0	32.4
Mean (±0.81)	27.7	34.0	37.1	32.9

	NO	NOI	Mean
	18.8	20.1	19.4
	(±1.14)		

General mean: 29.6

Mean D.M. %: 80.9

67/Da/8.3

GREAT HILL S.W. (W)

GRAIN

	N1	N2	N3	Mean
		(±2.25)		(±1.30)
B	30.7	35.6	42.5	36.3
I	20.1	33.3	36.4	29.9
Mean (±1.59)	25.4	34.5	39.5	33.1

NO	NOI	Mean
15.8	16.6	16.2
	(±2.25)	

General mean: 28.9

Mean D.M. %: 84.3

SPRING WHEAT

(WW 101)

CCC, irrigation, and nitrogen - Woburn Butt Close (Series II) 1967.

Design: 4 blocks of 2 plots split into 2 for CCC and again into 2 for nitrogen N4 - N3 + N2 - N1 on half plots.

Area of each quarter plot: 0.0136. Area harvested: 0.0036.

Treatments: All combinations of:-

Main plots:	1.	Irrigation: None (O), full irrigation (C).
Half plots:	2.	Chlormequat*: None (O), chlormequat sprayed at 2.5 lb in 37 gals (S).
Quarter plots:	3.	Nitrogen: 0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk'.

* 2-chloroethytrimethylammonium chloride, formerly described as CCC.

Basal applications: 240 lb (0:14:28) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 5 pints in 25 gals).

Cultivations, etc.: Ploughed: Nov 3, 1966. Basal PK applied, seed drilled at 170 lb: Mar 7, 1967. 'Nitro-Chalk' applied: Mar 14. Weedkiller applied: Apr 28. CCC applied: May 23. C plots, irrigation applied at 0.25 inches: July 11, July 21, at 0.5 on each of the following occasions: June 12, June 15, July 4, July 10, July 17, and at 1.0 inch: June 20 (total 4 inches). Combine harvested: Aug 24. Variety: Kloka.

NOTES: (1) Plant samples were taken on July 5 for estimates of dry weight of tops and roots. Soil cores were also taken for estimates of the weight of roots left in the soil.
(2) Sub-plots 101 - 132 were sampled on Aug 22 for estimates of straw height and weight.

Standard errors per plot. Grain:
1/2 plot: 2.38 or 5.3% (4 d.f.)
1/4 plot: 2.56 or 5.7% (8 d.f.)

SUMMARY OF RESULTS

GRAIN

	N1	N2	N3	N4	Mean
		(1) and (2)			
Mean	37.5	49.4	48.4	44.1	44.8
		(3) and (4)			
O	35.7	47.2	42.9	38.4	41.0
C	39.2	51.5	53.9	49.9	48.6
		(5) and (6)			(±0.84)
O	37.6	48.7	49.7	42.9	44.7
S	37.3	50.0	47.1	45.4	45.0

Mean D.M. %: 80.6

(1) (±0.90) For use in comparisons involving N4 - N2 or N3 - N1
(2) (±1.06) For use in all other comparisons
(3) (±1.28) For use in horizontal and interaction comparisons
(4) (±1.68) For use in all other horizontal and interaction comparisons
(5) (±1.28) For use in horizontal and interaction comparisons involving N2 - N2 or N3 - N1
(6) (±1.60) For use in all other comparisons

67/Da/9.3

STRAW

	N1	N2	N3	N4	Mean
Mean	33.4	50.3	54.9	57.8	49.1
O	31.6	47.8	50.0	55.8	46.3
C	35.2	52.8	59.8	59.8	51.9
O	37.6	53.1	61.6	62.7	53.7
S	29.2	47.5	48.3	52.9	44.5

Mean D.M. %: 83.2

67/Da/10.1

SPRING WHEAT

(WW 201)

Effect of sowing date and time of nitrogen application on the incidence of take-all (Ophiobolus graminis) - Woburn Road Piece 1967.

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

Area of each sub plot: 0.0207. Area harvested: 0.0106.

Treatments: All combinations of:-
Whole plots: 1. Sowing dates: Feb 15 (F), Mar 14 (M), Apr 17 (A). Seed drilled at 175 lb F plots, 170 lb M plots, and 185 lb A plots.
Sub plots: 2. Time of application of N: 0.8 cwt N at sowing (T1), 0.4 cwt N at sowing plus 0.4 cwt N on May 12 (T2), all N as 'Nitro-Chalk'.

Basal applications: 400 lb (0:14:28) combine drilled. Weedkiller: Ioxynil/mecoprop (Actril C at 5 pints in 35 gals).

Cultivations, etc.: Ploughed: Nov 8, 1966. Seed drilled and 'Nitro-Chalk' applied to F plots: Feb 15, 1967 - M plots: Mar 14 - A plots: Apr 17. Top dressing of 'Nitro-Chalk' applied to appropriate plots: May 12. Weedkiller applied: May 18. Combine harvested: Aug 22. Variety: Kloka. Previous crops: Barley 1965, 1966.

NOTE: Plant samples were taken during the growing season for incidence of take-all.

Standard errors per plot. Grain:
Whole plot: 1.27 or 5.6% (4 d.f.)
Sub plot: 2.24 or 9.8% (6 d.f.)

SUMMARY OF RESULTS

GRAIN

	F	M	A	Mean
		(1) and (2)		(±0.75)
T1	25.2	22.7	19.4	22.4
T2	27.3	22.8	19.7	23.3
Mean (±0.73)	26.2	22.7	19.6	22.8

(1) (±1.17) For use in horizontal and diagonal comparisons
(2) (±1.29) For use in vertical and interaction comparisons

WINTER WHEAT

(BG 1)

Sowing dates and bulb fly - Stackyard 1967, the third year.

Design: 3 randomised blocks of 3 plots, split into 2 for covering to prevent egg-laying (unrandomised).

Area of each sub plot: 0.0096. Area harvested: 0.0064.

Treatments: All combinations of:-
Whole plots: 1. Sowing dates: Oct 28 (E), Nov 29 (M), Dec 21 (L). (Seed rate 180 lb.)
Sub plots: 2. Not covered (O), covered with polythene sheet to prevent egg-laying, late June to mid-September 1966 (C).

Basal applications: 280 lb (6:15:15) combine drilled, 0.84 cwt N as 'Nitro-Chalk' in spring. Weedkillers: Diquat (Reglone at 4 pints in 40 gals), ioxynil/mecoprop (Actril C at 6 pints in 20 gals). Seed dressed with organo-mercury fungicide only.

Cultivations, etc.: Rotary cultivated twice: Mar 30 and May 19, 1966. Deep-tine cultivated: June 9. Rotary cultivated: July 1. Diquat applied: Oct 26. 'Nitro-Chalk' applied: Apr 18, 1967. Ioxynil/mecoprop applied: May 9. Combine harvested: Aug 30. Variety: Cappelle. Previous crops: Winter wheat 1965, fallow 1966.

NOTES: (1) For the previous year's results see 'Results' 65/Da/5 and 66/Da/3.
(2) Samples were taken from late February until mid-May to estimate numbers of plants, shoots and larvae and damaged plants and shoots. Samples were taken just before harvest to estimate ear number and grain weight.
(3) It was intended to sow four blocks, but on one the soil was too wet.

Standard errors per plot. Grain:
Whole plot: 6.46 or 15.9% (4 d.f.)
Sub plot: 5.57 or 13.8% (6 d.f.)

SUMMARY OF RESULTS

GRAIN

	E	M	L	Mean
		(1) and (2)		
O	49.6	39.5	27.4	38.8
C	50.6	42.8	33.5	42.3
Mean (±3.73)	50.1	41.1	30.4	40.6

(1) (±5.27) For use in horizontal comparisons only
(2) (±3.22) For use in interaction comparisons only

Mean D.M. %: 84.1

67/Db/1.1

BARLEY

(RB 101)

Spun and drilled seed and cultivations - Great Knott III 1967.

Design (each sowing method): 2 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 - duplicate treatments). Plough, spring-tine cultivate twice, sow, harrow (C3).

Drilled seed: All combinations of:-

Whole plot: 1. Seed rate: 112 lb (L), 140 lb (M).

Sub plot: 2. Seedbed cultivations: C1, C3 above (2 plots per block of each).

Basal applications: 340 lb (25:10:10). Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).

Cultivations, etc.: Ploughed: Oct 21, 1966. Basal NPK compound applied: Mar 14, 1967. Seed sown: Mar 15. Sprayed: May 11. Combine harvested: Aug 21. Variety: Maris Badger. Previous crops: Spring beans 1965, spring wheat 1966.

Standard errors per plot (pooled). Grain:

Whole plot: 1.45 or 3.5% (6 d.f.)

Sub plot: 2.39 or 5.8% (40 d.f.)

SUMMARY OF RESULTS

GRAIN

SPUN SEED

	C1	C2	C3	Mean
	(1) and (2)	(3) and (4)	(1) and (2)	(±0.72)
M	39.8	42.6	42.2	41.8
H	39.3	41.3	41.1	40.8
Mean	39.5 (±0.84)	42.0 (±0.60)	41.6 (±0.84)	41.3

(1) (±1.26) (3) (±0.94) For use in vertical and diagonal comparisons only.
(2) (±1.19) (4) (±0.84) For use in horizontal and interaction comparisons only.

DRILLED SEED

	C1	C3	Mean
	(1) and (2)		(±0.72)
M	40.8	40.7	40.7
H	42.4	41.4	41.9
Mean (±0.60)	41.6	41.0	41.3

(1) (±0.94) For use in vertical and diagonal comparisons only
(2) (±0.84) For use in horizontal and interaction comparisons only

Pooled mean: 41.3
Pooled D.M. %: 85.6

BARLEY

(RB 201)

Comparison of combines - Great Knott III 1967.

Design: 8 randomised blocks of 6 plots, with N rates applied to blocks. For plot length harvested plots are either whole, halved or quartered.

Area of each plot:		Area harvested:
Whole plots:		
Small combine:	0.0110	0.0043
Large combine:	0.0221	0.0086
Half plots:		
Small combine:	0.0055	0.0021
Large combine:	0.0110	0.0043
Quarter plots:		
Small combine:	0.0028	0.0011
Large combine:	0.0055	0.0021

Treatments: All combinations of:-

To blocks: 1. Nitrogen: 0.4 (N1), 0.8 (N2) cwt N as basal compound plus 'Nitro-Chalk'.

To plots: 2. Combine harvesters: PAM 150S cutting 8 rows (4'8''), Clayson M103 cutting 16 rows (9' 4''), between blank rows.

3. Length harvested: 40 feet (whole plot), 2 x 20 feet (half plots), 4 x 10 feet (quarter plots).

Basal applications: 300 lb (15:15:15) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).

Cultivations, etc.: Ploughed: Oct 21 - Nov 1, 1966. Seed drilled at 140 lb: Mar 13, 1967. 'Nitro-Chalk' applied: Mar 22. Sprayed: May 11. Combine harvested: Aug 22. Variety: Maris Badger. Previous crops: Spring beans 1965, spring wheat 1966.

Standard errors per plot. Grain:

Whole plots:		
Blocks:	1.09 or 2.5%	(3 d.f.)
Plots:	2.88 or 6.7%	(6 d.f.)
Half plots:		
Blocks:	1.44 or 3.3%	(3 d.f.)
Plots:	2.08 or 4.8%	(6 d.f.)
Quarter plots:		
Blocks:	1.55 or 3.6%	(3 d.f.)
Plots:	2.06 or 4.8%	(6 d.f.)

SUMMARY OF RESULTS

GRAIN

	L	S	Mean
	WHOLE PLOT		
	(1) and (2)		(±0.55)
N1	39.1	39.4	39.3
N2	47.2	47.0	47.1
Mean (±1.02)	43.2	43.2	43.2

(1) (±1.16) For use in vertical and diagonal comparisons
(2) (±1.44) For use in horizontal and interaction comparisons

	HALF PLOT		
	(1) and (2)		(±0.72)
N1	41.1	39.5	40.3
N2	47.9	44.7	46.3
Mean (±0.74)	44.5	42.1	43.3

(1) (±1.03) For use in vertical and diagonal comparisons
(2) (±1.04) For use in horizontal and interaction comparisons

Mean D.M. %: 86.3

67/Db/2.3

GRAIN

QUARTER PLOT

	L	S	Mean
	(1) and (2)		(±0.78)
N1	38.3	39.2	38.8
N2	44.5	48.1	46.3
Mean (±0.73)	41.4	43.7	42.5

(1) (±1.06) For use in vertical and diagonal comparisons
(2) (±1.03) For use in horizontal and interaction comparisons

Mean D.M. %: 86.3

BARLEY

(RB 301)

Spraying and wheelmarks - Pastures 1967.

Design: 4 randomised blocks of 4 plots.

Area of each plot: 0.0331. Area harvested: 0.0138.

Treatments: All combinations of:-

1. Weedkiller spray: None (O), sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals) (S).
2. Wheel damage: None (O), tractor wheel damage in spraying weedkiller, i.e. one passage of a wheeled tractor per harvested width (10 ft) (W).

Basal applications: 340 lb compound (25:10:10) combine drilled.

Cultivations, etc.: Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Ground chalk applied at 50 cwt: Jan 6. Ploughed second time: Jan 11. Seed drilled at 140 lb: Mar 17. Weedkiller applied to S plots and wheelmarks to W plots: May 18. Combine harvested: Aug 22. Variety: Maris Badger. Previous crops: Spring wheat 1965, fallow 1966.

Standard error per plot.
Grain: 1.27 or 3.5% (9 d.f.)

SUMMARY OF RESULTS

GRAIN

	O	W	Mean
	(±0.64)		(±0.45)
O	37.1	36.8	36.9
S	36.3	35.5	35.9
Mean (±0.45)	36.7	36.2	36.4

Mean D.M. %: 81.9

67/Dc/1.1

SPRING BEANS

(RBe 101)

Rhizobium strains - Long Hoos III 1967.

Design: 4 randomised blocks of 4 plots.

Area of each plot: 0.0202. Area harvested: 0.0127.

Treatments: Seed uninoculated (R0), inoculated with Rhizobium strain 1027 (R1), strain CZS (R2), strain 1007 (R3).

Basal applications: 360 lb (0:14:28) placement drilled. Weedkiller: Simazine at 1 lb a.i. in 32 gals. Insecticide: Demeton-s-methyl on two occasions at 3 oz in 37 gals, and at 3 oz in 3 gals by fixed-wing aircraft.

Cultivations, etc.: Ploughed: Sept 22, 1966. Ground chalk applied at 50 cwt: Jan 7, 1967. Ploughed second time: Jan 13. Seed drilled at 200 lb: Mar 16. Simazine applied: Mar 18. Insecticide applied: June 14 and July 11. Combine harvested: Sept 1. Variety: Tarvin. Previous crops: Potatoes 1965, spring wheat 1966.

NOTE: Counts of Rhizobium leguminosarum in the soil were made in March before sowing and from the rhizosphere and soil of selected plots in May, using hairy vetch (Vicia hirsuta). Counts of plants were taken in August.

Standard error per plot.
Grain: 1.43 or 4.2% (9 d.f.)

67/Dc/1.2

SUMMARY OF RESULTS

GRAIN

R0	R1	R2	R3	Mean
34.2	34.9	33.9	34.7	34.4
	(±0.71)			

Mean D.M. %: 79.2

67/Dd/1.1

POTATOES

(RP 2/1)

Effect of gaps - Pastures 1967.

Design: 5 randomised blocks of 2 plots, split into 6.

Area of each sub plot: 0.0071. Area harvested: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Time of gapping: At emergence on June 12 (E), at flowering on July 12 (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: 10 cwt (13:13:20). Weedkiller: Linuron at 0.75 lb plus paraquat at 0.5 lb ion in 37 gals. Fungicide: Mancozeb at 1.2 lb in 30 gals on four occasions.

Cultivations, etc.: Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal compound fertiliser applied: Mar 30. Rotary cultivated second time: Apr 19. Potatoes planted: Apr 20. Weedkiller applied: May 17. Fungicide applied: June 30, July 21, Aug 3, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 7. Lifted: Sept 20. Variety: Majestic. Previous crops: Spring wheat and barley 1965, fallow 1966.

Standard errors per plot. Total tubers:
Whole plot: 0.413 or 2.0% (4 d.f.)
Sub plot: 1.170 or 5.6% (40 d.f.)

SUMMARY OF RESULTS

	G0	G4	G8	G12	G16	G24	Mean
			TOTAL TUBERS				
			(1) and (2)				(±0.234)
E		21.93	21.59	21.20	21.90	20.28	21.38
F		21.03	20.71	20.44	19.54	18.40	20.02
Mean (±0.370)	22.38	21.48	21.15	20.82	20.72	19.34	20.98*

(1) (±0.512) For use in vertical and diagonal comparisons
(2) (±0.523) For use in horizontal and interaction comparisons

% WARE

E		97.2	97.7	97.4	97.9	98.0	97.6
F		97.2	97.7	97.5	97.7	98.1	97.6
Mean	97.5	97.2	97.7	97.5	97.8	98.1	97.6*

* General mean

67/Dd/2.1

POTATOES

(RP 3/1)

Effects of skin-spot (Oospora pustulans) - Pastures 1967.

Design: 6 blocks of 2 plots, split into 4. 3 blocks with weedkiller, 3 without (not randomised).

Area of each sub-plot: 0.0033. Area harvested: 0.0033.

Treatments: All combinations of:-

Columns of 3 blocks: 1. Weedkiller: None, with inter-row cultivations (O), sprayed with linuron at 0.75 lb plus paraquat at 0.5 lb ion in 37 gals, no inter-row cultivation (W).

Whole plots: 2. Varieties: King Edward (E), Majestic (M).

Sub plots: 3. Levels of seed infection (Oospora pustulans): Clean (A), moderately infected (B), severely infected (C), unselected stock (D).

Basal applications: 10 cwt (13:13:20). Fungicide: Mancozeb at 1.2 lb in 30 gals on four occasions.

Cultivations, etc.: Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal compound fertiliser applied: Mar 30. Rotary cultivated second time, potatoes planted: Apr 19. Weedkiller applied: May 17. 'O' blocks grubbed and mechanically weeded: May 19. 'O' blocks grubbed: June 15. Fungicide applied: June 30, July 21, Aug 3, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 20. Haulm destroyed mechanically: Sept 25. Lifted: Sept 28 and Oct 5. Previous crops: Spring wheat and barley 1965, fallow 1966.

Standard errors per plot. Total tubers:
Whole plot: 0.855 or 4.1% (4 d.f.)
1/4 plot: 1.098 or 5.2% (24 d.f.)

SUMMARY OF RESULTS

TOTAL TUBERS

	E	M	A	B	C	D	Mean
	(±0.494)*		(±0.448)*				
O	21.18	20.89	20.92	21.94	20.66	20.63	21.04
W	21.24	20.97	21.40	21.93	19.49	21.61	21.11
			(1) and (2)				(±0.349)
	E		21.02	21.91	20.22	21.70	21.21
	M		21.30	21.95	19.93	20.54	20.93
Mean (±0.317)			21.16	21.93	20.07	21.12	21.07

(1) (±0.522) For use in vertical and diagonal comparisons
(2) (±0.448) For use in horizontal and interaction comparisons

67/Dd/2.3

% WARE

	E	M	A	B	C	D	Mean
O	87.9	91.7	89.2	89.6	91.3	89.2	89.8
W	92.1	92.6	91.2	92.4	93.5	92.4	92.4
	E		89.0	90.2	91.7	89.3	90.0
	M		91.4	91.8	93.1	92.4	92.2
Mean			90.2	91.0	92.4	90.8	91.1

67/Dd/3.1

POTATOES

(RP 4/1)

Effects of 'dead eyes' (Oospora pustulans) - Pastures 1967.

Design: 6 blocks of 4 plots. 3 blocks with weedkiller, 3 without (not randomised).

Area of each plot: 0.0071. Area harvested: 0.0033.

Treatments: All combinations of:-

Columns of 3 blocks: 1. Weedkiller: None, with inter-row cultivations (O), sprayed with linuron at 0.75 and paraquat at 0.5 lb ion in 37 gals, no inter-row cultivation (W).

Plots: 2. Levels of seed infection (Oospora pustulans): Clean (A), moderately infected (B), severely infected (C), unselected stock (D).

Basal applications: 10 cwt (13:13:20). Fungicide: Mancozeb at 1.2 lb in 30 gals on four occasions.

Cultivations, etc.: Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal compound fertiliser applied: Mar 30. Rotary cultivated second time, potatoes planted: Apr 19. Weedkiller applied: May 17. 'O' blocks grubbed and mechanically weeded: May 19. 'O' blocks grubbed: June 14. Fungicide applied: June 30, July 21, Aug 3, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 20. Haulm destroyed mechanically: Sept 25. Lifted: Sept 28 and Oct 5. Variety: King Edward. Previous crops: Spring wheat and barley 1965, fallow 1966.

Standard error per plot.
Total tubers: 1.652 or 9.0% (12 d.f.)

SUMMARY OF RESULTS

	A	B	C	D	Mean
	TOTAL TUBERS (±0.954)*				
O	20.52	18.67	10.70	18.76	17.16
W	22.93	21.58	11.32	22.72	19.64
Mean (±0.675)	21.73	20.13	11.01	20.74	18.40
	% WARE				
O	87.2	90.6	90.9	87.0	89.0
W	90.8	91.3	92.2	90.3	91.2
Mean	89.0	91.0	91.5	88.7	90.1

* For use in horizontal and interaction comparisons only

POTATOES

(RP 5/1)

Effects of stem-canker (Rhizoctonia solani) - Pastures 1967.

Design: 6 randomised blocks of 2 plots, split into 4. 3 blocks with weedkiller, 3 without (not randomised).

Area of each sub plot: 0.0036. Area harvested: 0.0033.

Treatments: All combinations of:-

Columns of 3 blocks: 1. Weedkiller: None, with inter-row cultivation (O), sprayed with linuron at 0.75 lb and paraquat at 0.5 lb ion in 37 gals, no inter-row cultivation (W).

Plots: 2. Varieties: King Edward (E), Majestic (M).

Sub plots: 3. Levels of seed infection: Clean (A), moderately infected (B), severely infected (C), unselected stock (D).

Basal applications: 10 cwt (13:13:20). Fungicide: Mancozeb at 1.2 lb in 30 gals on four occasions.

Cultivations, etc.: Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal compound fertiliser applied: Mar 30. Rotary cultivated, potatoes planted: Apr 19. Weedkiller applied: May 17. 'O' blocks grubbed and mechanically weeded: May 19. 'O' blocks grubbed: June 14. Fungicide applied: June 30, July 21, Aug 3, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 20. Haulm destroyed mechanically: Sept 25. Lifted: Sept 28 and Oct 5. Previous crops: Spring wheat and barley 1965, fallow 1966.

Standard errors per plot. Total tubers:

Whole plots: 0.812 or 3.8% (4 d.f,)

Sub plots: 1.866 or 8.8% (24 d.f.)

SUMMARY OF RESULTS

	E	M	A	B	C	D	Mean
			TOTAL TUBERS				
	(±0.469)*			(±0.762)*			
O	19.36	20.63	20.35	21.24	18.30	20.09	20.00
W	22.56	22.73	23.75	22.01	22.40	22.44	22.65
				(1) and (2)			(±0.332)
	E		21.48	21.78	19.90	20.70	20.96
	M		22.62	21.47	20.80	21.82	21.68
Mean (±0.539)			22.05	21.62	20.35	21.26	21.32

* For use in horizontal and interaction comparisons only

(1) (±0.738) For use in vertical and diagonal comparisons
(2) (±0.762) For use in horizontal and interaction comparisons

			% WARE				
O	82.4	90.0	85.2	87.6	84.1	87.9	86.2
W	84.9	90.9	88.2	88.1	87.0	88.3	87.9
	E		84.3	84.9	80.5	84.9	83.6
	M		89.1	90.8	90.5	91.3	90.5
Mean			86.7	87.9	85.5	88.1	87.0

67/Dd/5.1

POTATOES

(RP 6/1)

Effects of gangrene (Phoma spp.) - Pastures 1967.

Design: 6 blocks of 2 plots, split into 4. 3 blocks with weedkiller, 3 without (not randomised).

Area of each sub plot: 0.0071. Area harvested: 0.0033.

Treatments: All combinations of:-

Columns of 3 blocks: 1. Weedkiller: None, with inter-row cultivations (O), sprayed with linuron at 0.75 lb plus paraquat at 0.5 lb ion in 37 gals, no inter-row cultivation (W).

Plots: 2. Varieties: King Edward (E) Majestic (M).

Sub plots: 3. Levels of seed infection (Phoma spp.): Clean (A), moderately infected (B), severely infected (C), unselected stock (D).

Basal applications: 10 cwt (13:13:20). Fungicide: Mancozeb at 1.2 lb in 30 gals on four occasions.

Cultivations, etc.:- Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal compound fertiliser applied: Mar 30. Rotary cultivated second time, potatoes planted: Apr 19. Weedkiller applied: May 17. 'O' blocks grubbed and mechanically weeded: May 19. 'O' blocks grubbed: June 14. Fungicide applied: June 30, July 21, Aug 3, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 20. Haulm destroyed mechanically: Sept 28. Lifted: Oct 10. Previous crops: Spring wheat and barley 1965, fallow 1966.

Standard errors per plot. Total tubers:

Whole plot: 0.557 or 2.7% (4 d.f.)

Sub plot: 1.070 or 5.2% (24 d.f.)

SUMMARY OF RESULTS

	E	M	A	B	C	D	Mean
			TOTAL TUBERS				
	(±0.321)*			(±0.437)*			
O	19.04	20.94	22.94	20.01	16.96	20.06	19.99
W	20.20	22.08	23.63	21.68	18.48	20.76	21.14
				(1) and (2)			(±0.227)
	E		22.58	19.27	17.07	19.55	19.62
	M		23.99	22.41	18.36	21.27	21.51
Mean (±0.309)			23.29	20.84	17.72	20.41	20.56

* For use in horizontal and interaction comparisons only
(1) (±0.441) For use in vertical and diagonal comparsons
(2) (±0.437) For use in horizontal and interaction comparisons

			% WARE				
O	83.7	91.7	89.6	86.2	87.1	87.8	87.7
W	82.6	92.2	88.3	86.0	87.8	87.4	87.4
	E		84.3	81.4	83.9	82.9	83.1
	M		93.6	90.8	91.0	92.4	92.0
Mean			88.9	86.1	87.5	87.6	87.5

67/Dd/6.1

POTATOES

(RP 7/1)

Effects of stem-canker (Rhizoctonia solani) on stored seed - Pastures 1967.

Design: 6 randomised blocks of 8 plots. 3 blocks with weedkiller, 3 without (not randomised).

Area of each sub plot: 0.0036. Area harvested: 0.0056.

Treatments: All combinations of:-

Columns of 3 blocks:
1. Weedkiller: None, with inter-row cultivations (WO), sprayed with linuron at 0.75 lb and paraquat at 0.5 lb ion in 37 gals, no inter-row cultivations (WW).

Plots:
2. Varieties: King Edward (E), Pentland Dell (P).
3. Seed infection: None (O), infected with stem-canker (Rhizoctonia solani) (R).
4. Seed storage: Stored dry (DR), stored damp (DA).

Basal applications: 10 cwt (13:13:20). Fungicide: Mancozeb at 1.2 lb in 30 gals on four occasions.

Cultivations, etc.: Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal compound fertiliser applied: Mar 30. Rotary cultivated, potatoes planted: Apr 19. Weedkiller applied: May 17. WO plots grubbed and mechanically weeded: May 19. WO plots grubbed: June 14. Fungicide applied: June 30, July 21, Aug 3, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 20. Haulm destroyed mechanically: Sept 28. Lifted: Sept 28 and Oct 4. Previous crops: Spring wheat and barley 1965, fallow 1966.

Standard error per plot.
Total tubers: 1.178 or 10.4% (28 d.f.)

SUMMARY OF RESULTS

TOTAL TUBERS

	WO	WW	O	R	DR	DA	Mean
	(±0.340)*		(±0.340)		(±0.340)		(±0.240)
E	12.10	12.67	12.60	12.17	12.39	12.37	12.38
P	9.47	10.89	10.37	9.98	10.12	10.24	10.18
Mean	10.78	11.78	11.48	11.08	11.25	11.31	11.28
			(±0.240)		(±0.240)		

	WO O	WO R	WW O	WW R
	(±0.481)*			
E	11.84	12.35	13.35	11.99
P	9.37	9.56	11.37	10.41

	WO DR	WO DA	WW DR	WW DA
	(±0.481)*			
E	11.98	12.22	12.81	12.53
P	9.40	9.53	10.84	10.95

	O DR	O DA	R DR	R DA
	(±0.481)*			
E	12.66	12.53	12.12	12.22
P	10.27	10.48	9.97	10.00

* For use in comparisons within the same weedkiller treatment

67/Dd/6.3

% WARE

	WO	WW	O	R	DR	DA	Mean
E	86.1	87.0	87.6	85.6	85.7	87.5	86.6
P	94.8	94.8	94.6	95.0	94.4	95.2	94.8
Mean	90.5	90.9	91.1	90.3	90.0	91.3	90.7

	WO O	WO R	WW O	WW R
E	86.0	86.2	89.1	84.9
P	94.5	95.1	94.7	94.8

	WO DR	WO DA	WW DR	WW DA
E	85.1	87.2	86.3	87.8
P	94.5	95.1	94.2	95.3

	O DR	O DA	R DR	R DA
E	85.8	89.3	85.5	85.6
P	94.1	95.1	94.6	95.3

67/Dd/7.1

POTATOES

(RP 8/1)

Oospora*-free seed - Pastures 1967.

Design: 6 blocks of 3 plots.

Area of each plot: 0.0071. Area harvested: 0.0031.

Treatments: Oospora-free seed (F), Oospora-free seed re-infected with Oospora (R), normal stock seed (N).

* Oospora pustulans - skinspot.

Basal applications: 10 cwt (13:13:20). Weedkiller: Linuron at 0.75 lb plus paraquat at 0.5 lb ion in 37 gals. Fungicide: Mancozeb at 1.2 lb in 30 gals on four occasions.

Cultivations, etc.:- Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal NPK compound applied: Mar 30. Rotary cultivated second time, potatoes planted: Apr 24. Weedkiller applied: May 18. Fungicide applied: June 30, July 21, Aug 3, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 20. Haulm destroyed mechanically, potatoes lifted: Sept 28. Variety: King Edward. Previous crops: Spring wheat and barley 1965, fallow 1966.

Standard error per plot:
Total tubers: 1.642 or 6.9% (10 d.f.)

67/Dd/7.2

SUMMARY OF RESULTS

F	R	N	Mean
	TOTAL TUBERS		
	(±0.670)		
24.74	22.80	23.78	23.77
	% WARE		
78.7	87.6	86.4	84.2

67/Dd/8.1

POTATOES

(RP 9/1)

Blight (Phytophthora infestans) and aphid attack - Pastures 1967.

Design: 4 blocks of 8 plots.

Area of each plot: 0.0283. Area harvested: 0.0071.

Treatments: All combinations of:-

1. Time of application of aphicide: None (O), 1.5 lb phorate applied with seed (E), sprayed with demeton-s-methyl* in July (L), 1.5 lb phorate applied with seed, sprayed with demeton-s-methyl* in July (EL).
2. Fungicide: None (O), sprayed with mancozeb at 1.2 lb in 30 gals (F).

* At 3 oz in 30 gals.

Basal applications: 10 cwt (13:13:20). Weedkiller: Linuron at 0.75 lb plus paraquat at 0.5 lb ion in 37 gals.

Cultivations, etc.: Rotary cultivated: Sept 16, 1966. Ploughed: Nov 23 - Jan 5, 1967. Basal NPK compound applied: part, Mar 3, part, Apr 17. Rotary cultivated second time, potatoes planted: Apr 18. Weedkiller applied: May 16. F plots sprayed with fungicide: June 30, July 21, Aug 3 and Aug 24. L and EL plots sprayed with demeton-s-methyl: July 21. Sprayed with undiluted BOV at 15 gals: Sept 20. Lifted: Oct 4. Variety: King Edward. Previous crops: Barley 1965, fallow 1966.

NOTE: Samples were taken throughout the season for assessment of blight (Phytophthora infestans) and of bulking.

Standard error per plot.
Total tubers: 1.250 or 5.8% (21 d.f.)

SUMMARY OF RESULTS

	O	E	L	EL	Mean
		TOTAL TUBERS			
		(±0.625)			(±0.313)
O	19.78	20.11	20.02	19.57	19.87
F	23.99	23.71	22.63	23.32	23.41
Mean (±0.442)	21.88	21.91	21.32	21.45	21.64
		% WARE			
O	92.6	92.1	92.8	91.8	92.3
F	93.2	93.4	92.4	93.2	93.0
Mean	92.9	92.8	92.6	92.5	92.7

POTATOES

(RP 10/1 and WP 101)

Chitting and scab - Rothamsted (R) Pastures and Woburn (W) Great Hill Bottom I, 1967.

Design: 4 randomised blocks of 3 plots.

Area of each plot: 0.0150. Area harvested: 0.0007.

Treatments:
Non-chitted seed planted Apr 20 - 21 (OE), May 18 (OL), chitted seed planted Apr 20 - 21 (CE).

Basal applications: 10 cwt (13:13:20). Weedkiller: Linuron at 0.75 lb plus paraquat at 0.5 lb in 37 gals. Fungicides:- Pastures (R): Mancozeb at 1.2 lb in 30 gals. Great Hill (W): Fentin acetate at 4.2 oz plus maneb at 1.4 lb in 30 gals on three occasions, and mancozeb at 1.2 lb in 30 gals.

Cultivations, etc.:
Pastures (R): Rotary cultivated: Sept 16, 1966. Ground chalk applied at 50 cwt: Jan 6, 1967. Ploughed: Jan 11. Basal NPK compound applied: Apr 4. Plots rotary cultivated, potatoes machine planted on OE and CE plots: Apr 20. Weedkiller applied, potatoes dibbled in on OL plots: May 18. Fungicide applied: Aug 3. Sprayed with undiluted BOV at 15 gals: Aug 23. Lifted: Aug 29. Variety: Majestic. Previous crops: Spring wheat 1965, fallow 1966.
Great Hill Bottom I (W): Ploughed: Aug 5, 1966. Ground chalk applied at 40 cwt: Jan 9, 1967. Deep-tine cultivated: Mar 20. Basal NPK compound applied: Mar 20. Rotary cultivated: Apr 20. Potatoes machine planted on OE and CE plots: Apr 21. Weedkiller applied: May 12. Potatoes dibbled in on OL plots: May 18. Sprayed with fentin acetate plus maneb: July 3, July 26, Aug 21. Sprayed with mancozeb: Aug 8. Lifted: Aug 25. Variety: Majestic. Previous crops: Sugar beet 1965, fallow 1966.

NOTE: Samples were taken in June and July for estimates of the incidence of scab and for the degree of tuberisation.

Standard errors per plot. Total tubers:
Pastures (R): 1.117 or 6.4% (6 d.f.)
Great Hill Bottom I (W): 0.771 or 5.8% (6 d.f.)

67/Dd/9.2

SUMMARY OF RESULTS

TOTAL TUBERS

OE	OL	CE	Mean
PASTURES (R) (±0.559)			
17.93	15.85	18.64	17.47
GREAT HILL BOTTOM I (W) (±0.386)			
13.49	11.36	15.12	13.32

67/Dd/10.1

POTATOES

(RP 11/1)

Varieties, N and scab - Pastures 1967.

Design: 4 blocks of 3 plots, split for N.

Area of each sub plot: 0.0120. Area harvested: 0.0028.

Treatments: All combinations of:-
Whole plots: 1. Varieties: Majestic (M), King Edward (E), Pentland Dell (D).
Sub plots: 2. N: None (N0), 1.0 (N1), 2.0 (N2) cwt N as 'Nitro-Chalk'.

Basal applications: 670 lb (0:14:28). Weedkiller: Linuron at 0.75 lb plus paraquat at 0.5 lb ion in 37 gals. Fungicide: Mancozeb at 1.2 lb in 30 gals on three occasions.

Cultivations, etc.: Rotary cultivated: Sept 16, 1966. Ground chalk applied at 50 cwt: Jan 6, 1967. Ploughed: Jan 11. Basal PK compound applied: Apr 4. 'Nitro-Chalk' applied: Apr 18. Plots rotary cultivated, potatoes machine planted: Apr 21. Weedkiller applied: May 18. Fungicide applied: June 29, July 21, Aug 4. Sprayed with undiluted BOV at 15 gals: Aug 23. Lifted: Sept 15. Previous crops: Spring wheat 1965, fallow 1966.

NOTE: Samples were taken during June and July for estimates of the incidence of scab and for the degree of tuberisation.

Standard errors per plot. Total tubers:
Whole plot: 1.195 or 6.9% (6 d.f.)
Sub plot: 1.219 or 7.1% (18 d.f.)

SUMMARY OF RESULTS

	N0	N1	N2	Mean
		TOTAL TUBERS		
		(1) and (2)		(±0.598)
M	15.61	19.48	20.97	18.69
E	14.90	17.80	19.51	17.40
D	12.25	16.59	17.94	15.59
Mean (±0.352)	14.25	17.96	19.47	17.23

(1) (±0.778) For use in vertical and diagonal comparisons
(2) (±0.610) For use in horizontal and interaction comparisons

% WARE

M	95.0	96.6	96.8	96.1
E	89.7	92.9	92.1	91.6
D	97.6	97.6	97.6	97.6
Mean	94.1	95.7	95.5	95.1

67/Dd/11.1

POTATOES

(RP 12a/1 and RP 12b/21)

Transmission of scab (Streptomyces scabies) - Fosters O & E VI and Highfield O & E III, 1967.

Design (each field): 4 blocks of 5 plots, split into 2.

Area of each sub plot: 0.0014. Area harvested: 0.0013.

Treatments: All combinations of:-
Whole plots: 1. Seed tuber infection (Streptomyces scabies): Severe (SV), moderate (MD), slight (SL), clean (CL), clean seed formalin dipped (FD).
Sub plots: 2. Chitting: None (O), seed chitted (C).

Basal applications: 10 cwt (13:13:20). Weedkiller: Linuron at 0.75 lb plus paraquat at 0.5 lb ion in 37 gals. Fungicide: Mancozeb at 1.2 lb in 30 gals on three occasions.

Cultivations, etc.: Ploughed: Sept 12, 1966. Basal NPK compound applied: Apr 5, 1967. Plots rotary cultivated, potatoes machine-planted: Apr 26. Weedkiller applied: May 17. Fungicide applied: June 30, July 21, Aug 3. Sprayed with undiluted BOV at 15 gals: Aug 23. Lifted: Sept 22. Variety: Majestic. Previous crops: Fosters - Clover 1965 and 1966, Highfield: Potatoes 1965, barley 1966.

NOTE: Samples were taken during June and July for estimates of the incidence of scab and for the degree of tuberisation.

Standard errors per plot. Total tubers:
Fosters O & E VI. Whole plot: 0.931 or 6.0% (12 d.f.)
Sub plot: 0.966 or 6.3% (15 d.f.)
Highfield O & E III. Whole plot: 1.125 or 7.0% (12 d.f.)
Sub plot: 1.639 or 10.1% (15 d.f.)

SUMMARY OF RESULTS

TOTAL TUBERS

	SV	MD	SL	CL	FD	Mean
			FOSTERS O & E VI			
			(1) and (2)			(±0.216)
O	14.42	16.59	15.00	16.17	15.67	15.57
C	13.92	17.17	15.25	15.25	14.58	15.23
Mean (±0.465)	14.17	16.88	15.13	15.71	15.13	15.40
			HIGHFIELD O & E III			
			(1) and (2)			(±0.366)
O	14.42	14.92	14.67	16.67	16.08	15.35
C	16.50	18.59	17.75	15.08	17.17	17.02
Mean (±0.563)	15.46	16.75	16.21	15.88	16.63	16.18

Foster O + E VI (1) (±0.577) For use in horizontal and diagonal comparisons
(2) (±0.483) For use in vertical and interaction comparisons

Highfield O & E III (1) (±0.808) For use in horizontal and diagonal comparisons
(2) (±0.819) For use in vertical and interaction comparisons

67/De/1.1

SUGAR BEET

Effect of soil compaction on growth of sugar beet, Saxmundham Grove Plot, 1967, the first year.

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

Area of each sub-plot: 0.0145. Area harvested: 0.0015.

Treatments: All combinations of:-

Plots 1. Soil preparation: Soil worked down in winter and allowed to compact (A), soil worked down in spring and compressed (B), soil kept as open as possible when working seedbed (C).

Sub-plots 2. Fertilisers: 0.6 cwt (N1), 1.2 cwt (N2), 1.8 cwt (N3) 1.2 cwt N plus, 1.6 cwt P2O5 applied as triple superphosphate, half in winter, half in spring (N2P). All N applied in seedbed as 'Nitro-Chalk'.

Basal applications: 0.8 cwt P2O5, 1.0 cwt K2O as triple superphosphate and muriate of potash. Insecticide: Demeton-s-methyl at 3 oz in 37 gals on 2 occasions.

Cultivations, etc.: Ploughed: Nov 29 - Dec 16, 1966. A plots rotary cultivated twice, half phosphate dressing applied to NP sub-plots: Feb 15, 1967. B and C plots worked 3 times with a heavy spring-tine cultivator: Mar 29. All plots harrowed four times with light drag-harrows (twice in each direction), basal PK, 'Nitro-Chalk' and second half phosphate dressing (NP sub-plots) applied, seed drilled at 7 lb. B plots compressed by rolling four times with Cambridge roller: Mar 30. Singled: May 17. Insecticide applied: June 12 and July 7. Lifted: Oct 4. Variety: Sharp's Klein E. Previous crops: Barley 1965 and 1966.

Standard errors per plot.

Roots (washed):	Whole plot:	1.083 or 7.0% (6 d.f.)
	Sub-plot:	2.053 or 13.3% (27 d.f.)
Total sugar:	Whole plot:	4.02 or 7.7% (6 d.f.)
	Sub-plot:	7.37 or 14.1% (27 d.f.)

SUMMARY OF RESULTS

	N1	N2	N3	N2P	Mean
		ROOTS (WASHED)			
		(1) and (2)			(±0.541)
A	10.66	14.98	17.18	15.20	14.50
B	13.86	14.76	17.79	14.87	15.32
C	13.79	17.03	16.03	19.27	16.53
Mean (±0.593)	12.77	15.59	17.00	16.45	15.45
		SUGAR %			
A	16.9	17.1	16.7	17.3	17.0
B	17.0	16.7	16.4	16.8	16.7
C	17.3	17.2	16.7	16.5	16.9
Mean	17.1	17.0	16.6	16.9	16.9

(1) (±1.041) For use in vertical and diagonal comparisons
(2) (±1.027) For use in horizontal and interaction comparisons

	N1	N2	N3	N2P	Mean
		TOTAL SUGAR			
		(1) and (2)			(±2.01)
A	36.1	51.4	57.5	52.9	49.5
B	47.2	49.4	58.3	50.0	51.2
C	47.8	58.6	53.4	63.6	55.8
Mean (±2.13)	43.7	53.1	56.4	55.5	52.2
		PLANT NUMBER			
A	22.3	25.0	24.8	26.6	24.7
B	27.4	27.9	25.5	24.2	26.3
C	26.9	29.8	26.5	31.3	28.6
Mean	25.5	27.6	25.6	27.4	26.5

(1) (±3.77) For use in vertical and diagonal comparisons
(2) (±3.69) For use in horizontal and interaction comparisons

67/Df/1.1

GRASS

(RG 101)

Anhydrous and aqueous ammonia - Bones Close 1967.

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 (Nov 15) — IAA
     - Injected aqueous ammonia (Nov 7) — IQA
   - Applied in spring:
     - Injected anhydrous ammonia (Mar 7) — IAS
     - Injected aqueous ammonia (Mar 8) — IQS
   - Broadcast 'Nitro-Chalk':
     - Applied in 3 equal dressings — BD
     - Applied as single dressing — BS
2. N: 1.0 (N1), 2.0 (N2), 3.0 (N3), 4.0 (N4) cwt (total for the season).

Basal application: 900 lb (0:14:28) in winter.

Cultivations, etc.: Basal PK compound applied: Nov 22, 1966. 'Nitro-Chalk' applied (treatment BS and first dressing of BD): Mar 22, 1967. Cut three times: May 31, July 20, Oct 11. 'Nitro-Chalk' applied after first two cuts for BD treatment.

NOTE: Soil samples were taken to determine extent of ammonia diffusion and grass samples for dry matter and percentage of N, P and K.

Standard errors per plot. Grass dry matter

1st cut:	4.46 or 8.8% (46 d.f.)
2nd cut:	2.09 or 11.3% (46 d.f.)
3rd cut:	1.98 or 18.9% (46 d.f.)
Total of 3 cuts:	5.90 or 7.4% (46 d.f.)

SUMMARY OF RESULTS

	IAA	IQA	IAS	IQS	BD	BS	Mean
			1ST CUT				
			(±2.57)				(±1.05)
N1	47.4	53.6	49.8	45.6	43.7	51.0	48.5
N2	51.2	53.3	47.6	49.2	52.2	46.0	49.9
N3	55.3	54.9	51.1	48.5	48.3	48.4	51.1
N4	57.2	56.6	47.3	48.6	51.1	49.9	51.8
Mean (±1.29)	52.8	54.6	48.9	48.0	48.8	48.8	50.3

NO: 37.2 (±1.82)
General mean: 49.3
Mean D.M. %: 15.4

			2ND CUT				
			(±1.20)				(±0.49)
N1	8.2	9.9	16.4	12.3	15.8	12.5	12.5
N2	10.3	21.3	19.6	18.1	23.5	18.0	18.5
N3	16.7	22.3	18.5	22.8	24.6	20.2	20.8
N4	16.5	23.9	20.6	23.8	22.9	25.7	22.2
Mean (±0.60)	12.9	19.4	18.8	19.3	21.7	19.1	18.5

NO: 6.3 (±0.84)
General mean: 17.6
Mean D.M. %: 24.4

	IAA	IQA	IAS	IQS	BD	BS	Mean
			3RD CUT				
			(±1.14)				(±0.47)
N1	2.5	2.6	4.6	3.3	10.4	2.9	4.4
N2	3.0	6.7	7.7	5.4	17.5	5.2	7.6
N3	5.8	12.0	11.2	13.5	20.5	9.8	12.1
N4	7.5	18.8	14.0	22.6	22.8	21.2	17.8
Mean (±0.57)	4.7	10.0	9.3	11.2	17.8	9.8	10.5

NO: 2.3 (±0.81)
General mean: 58.1
Mean D.M. %: 17.7

			TOTAL OF 3 CUTS				
			(±3.41)				(±1.39)
N1	58.1	66.2	70.7	61.3	69.9	66.5	65.4
N2	64.4	81.4	74.9	72.8	93.1	69.2	76.0
N3	77.8	89.3	80.7	84.8	93.3	78.4	84.1
N4	81.2	99.3	81.8	95.1	96.8	96.8	91.8
Mean (±1.70)	70.4	84.0	77.0	78.5	88.3	77.7	79.3

NO: 45.8 (±2.41)
General mean: 76.7
Mean D.M. %: 19.2

67/Df/2.1

GRASS

(RG 201)

Nitrogen and damage to sward by ammonia-injectors, Bones Close 1967.

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 (O), 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 application: 900 lb (0:14:28) applied in winter.

Cultivations, etc.: Autumn injector slits made - 'Aqua': Nov 7, 1966, 'Anhydrous': Nov 14. Basal PK compound applied: Nov 22. Spring injector slits made - 'Anhydrous': Mar 7, 1967, 'Aqua': Mar 8. 'Nitro-Chalk' applied: Mar 22. Cut three times: June 1, July 20, Oct 12. 'Nitro-Chalk' applied after first two cuts.

NOTE: Grass samples were taken for dry matter and percentage of N.

Standard errors per plot (estimated from the 3-factor interaction).

Dry matter:

1st cut:	2.42 or 5.0% (4 d.f.)
2nd cut:	3.26 or 14.4% (4 d.f.)
3rd cut:	0.83 or 5.7% (4 d.f.)
Total of 3 cuts:	3.89 or 4.5% (4 d.f.)

67/Df/2.2

SUMMARY OF RESULTS

DRY MATTER

	IA	IQ	N1	N2	N3	Mean
			1ST CUT			
	(±1.40)			(±1.71)		(±0.99)
A	50.0	53.3	50.7	46.3	58.0	51.7
S	48.3	44.6	43.7	47.7	47.9	46.4
				(±1.71)		(±0.99)
		O	43.8	47.5	54.0	48.4
		IA	50.4	46.6	50.4	49.1
		IQ	43.9	47.4	55.5	48.9
Mean (±0.99)			46.1	47.2	53.3	48.8

Mean D.M. %: 15.8

67/Df/2.3

DRY MATTER

	IA	IQ	N1	N2	N3	Mean
			2ND CUT			
	(±1.88)			(±2.31)		(±1.33)
A	23.2	22.3	18.2	24.2	25.8	22.8
S	22.4	22.1	16.9	24.0	25.8	22.3
				(±2.31)		(±1.33)
		O	19.3	23.2	25.8	22.8
		IA	18.0	23.8	26.5	22.8
		IQ	17.1	24.4	25.2	22.2
Mean (±1.33)			18.2	23.8	25.8	22.6

Mean D.M. %: 24.0

67/Df/2.4

DRY MATTER

	IA	IQ	N1	N2	N3	Mean
			3RD CUT			
	(±0.48)			(±0.59)		(±0.34)
A	15.0	13.7	9.4	15.6	18.1	14.3
S	14.3	15.7	10.1	16.4	18.6	15.0
				(±0.59)		(±0.34)
		O	9.5	15.6	18.2	14.4
		IA	9.9	15.7	18.3	14.6
		IQ	9.5	16.3	18.4	14.7
Mean (±0.34)			9.6	15.9	18.3	14.6

Mean D.M.%: 18.8

67/Df/2.5

DRY MATTER

	IA	IQ	N1	N2	N3	Mean
	TOTAL OF 3 CUTS					
	(±2.25)			(±2.75)		(±1.59)
A	88.2	89.3	78.3	86.1	101.9	88.8
S	85.0	82.5	70.7	88.1	92.4	83.7
				(±2.75)		(±1.59)
		O	72.6	86.4	98.0	85.7
		IA	78.4	86.1	95.3	86.6
		IQ	70.6	88.1	99.1	85.9
Mean (±1.59)			73.9	86.9	97.4	86.0

Mean D.M. %: 19.5

67/Dg/1.1

OILSEED RAPE

(RRa 101)

Row spacing, seed rates and N - Highfield IV, 1967.

Design: 5 randomised blocks of 4 plots, split for N.

Area of each sub plot: 0.0129. Area harvested: 0.0092.

Treatments: All combinations of:-
Whole plots: 1. Row spacing: 20 inches (W), 4 inches (N).
2. Seed rate: 5 lb (L), 10 lb (H).
Sub plots: 3. N: 1.0 (N1), 1.4 (N2), 1.8 (N3) cwt as basal compound fertiliser plus 'Nitro-Chalk'.

Basal applications: 750 lb (15:15:15) broadcast by drill. Ground chalk at 2 tons (part area), 4 tons (remainder). Insecticide: Malathion at 18 oz in 30 gals.

Cultivations, etc.: Ploughed: Nov 4, 1966. Ground chalk applied: Jan 4, 1967. Basal NPK applied: Mar 28. Seed drilled: Mar 30. 'Nitro-Chalk' applied: Mar 31. Insecticide applied: June 16. Combine harvested: Sept 6. Variety: Nilla. Previous crops: Barley 1965 and 1966.

NOTE: At harvest the crop was leaning down the length of the plots in a south-westerly direction. Alternate whole plots were cut by the combine working in opposite directions. On plots where the combine moved south-west (with the lie of the crop) yields were less than on plots cut the other way. The estimated difference of grain yield was 0.5 cwt per acre. The means presented have been adjusted accordingly. (The sub-plot comparisons are not affected as all sub-plots in one whole plot were cut the same way). The comparison of seed rates is also not affected as, by a chance of the randomisation the plots of each level were harvested half in each direction.

Standard errors per plot.
Grain (at 90% dry matter). Whole plot: 1.37 or 6.6% (11 d.f.)
Sub plot: 3.80 or 18.1% (32 d.f.)
Yield of fixed oil: lb per acre.
Whole plot: 55.4 or 6.7% (11 d.f.)
Sub plot: 149.3 or 18.1% (32 d.f.)

SUMMARY OF RESULTS

GRAIN (AT 90% D.M.) CWT PER ACRE

	L	H	N1	N2	N3	Mean
	(±0.61)			(1) and (2)		(±0.43)
W	21.0	21.2	19.2	21.5	22.5	21.1
N	20.0	21.9	20.3	21.4	21.1	20.9
				(1) and (2)		(±0.43)
		L	19.5	21.0	20.9	20.5
		H	20.0	21.9	22.7	21.5
		Mean (±0.85)	19.7	21.4	21.8	21.0

(1) (±1.07) For use in vertical and diagonal comparisons
(2) (±1.20) For use in horizontal and interaction comparisons

Mean D.M. %: 84.0

	L	H	N1	N2	N3	Mean
			% FIXED OIL			
W	38.8	39.5	39.4	39.2	38.9	39.1
N	38.9	39.2	40.5	38.5	38.3	39.1
		L	39.6	38.3	38.7	38.8
		H	40.3	39.4	38.5	39.4
		Mean	39.9	38.8	38.6	39.1
			YIELD OF FIXED OIL: LB PER ACRE			
	(±24.8)			(1) and (2)		(±17.5)
W	819	841	762	848	881	830
N	781	866	826	831	815	824
				(1) and (2)		(±17.5)
		L	777	810	814	800
		H	811	869	882	854
		Mean (±33.4)	794	839	848	827

(1) (±42.3) For use in vertical and diagonal comparieons
(2) (±47.2) For use in horizontal and interaction comparisons

METEOROLOGICAL RECORDS 1967 - ROTHAMSTED

(Departure from long period means in brackets)

Month	Total sunshine: hours	Mean temperature: °F Air(1)	Dew point	In ground 1 ft.	4 ft.	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	54 (+1.3)	38.9 (+1.8)	36.3	39.3	43.7	18	1.89 (-0.62)	16	1.65	5.1
Feb	81 (+13.0)	41.1 (+2.9)	36.2	41.3	43.7	13	2.48 (+0.56)	13	1.68	7.2
Mar	166 (+50.1)	44.5 (+3.2)	37.0	43.4	43.9	12	1.21 (-0.70)	9	0.69	8.5
Apr	127 (-25.7)	45.3 (-0.6)	38.6	45.5	44.8	9	1.96 (+0.01)	13	0.57	7.3
May	155 (-40.8)	51.0 (-1.0)	45.3	51.6	47.7	2	5.03 (+2.91)	22	2.83	5.3
June	199 (-3.7)	56.9 (-0.4)	49.8	57.7	51.9	2	2.07 (-0.15)	5	1.00	4.7
July	220 (+28.8)	62.5 (+1.9)	55.3	62.1	55.5	0	2.17 (-0.38)	10	0.17	4.1
Aug	152 (-29.7)	59.8 (-0.3)	54.9	61.1	57.4	0	1.76 (-0.83)	15	0.34	3.9
Sept	109 (-36.6)	56.3 (+0.2)	52.2	57.9	57.2	0	2.30 (-0.09)	19	0.29	4.7
Oct	93 (-10.6)	50.8 (+1.7)	47.3	53.7	55.4	3	6.02 (+3.08)	22	4.50	6.0
Nov	67 (+6.2)	41.1 (-1.4)	39.1	44.4	50.6	16	2.09 (-0.70)	20	1.73	4.5
Dec	64 (+18.2)	38.0 (-0.6)	33.1	41.0	46.7	18	2.44 (-0.19)	20	2.00	5.5
Year	1487 (-29.5)	48.9 (-0.6)	43.8	49.9	49.9	93	31.42 (+2.90)	184	17.45	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.

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METEOROLOGICAL RECORDS 1967 - WOBURN

(Departure from long period means in brackets)

Month	Total Sun-shine: hours	Mean temperature: F Air(1)	Mean temperature: F In ground 1 ft.	Grass minimum F	Total rainfall: in 5 in. gauge*	Rain(2) days
January	63 (+11.5)	39.9 (+2.1)	39.2	30.8	1.01 (-1.09)	14
February	81 (+14.5)	42.3 (+3.9)	41.2	30.2	2.09 (+0.48)	13
March	176 (+57.5)	44.7 (+2.8)	43.8	33.3	1.30 (-0.35)	12
April	145 (+3.3)	45.3 (-1.1)	46.1	34.9	2.42 (+0.55)	14
May	169 (-18.7)	50.6 (-1.4)	52.9	38.8	4.27 (+2.16)	22
June	215 (+19.0)	55.9 (-1.6)	58.5	46.3	1.35 (-0.52)	5
July	227 (+43.8)	62.7 (+1.7)	63.4	49.0	1.65 (-0.67)	11
August	154 (-22.1)	60.4 (0.0)	61.6	48.0	1.23 (-1.20)	16
September	100 (-38.2)	56.2 (-0.3)	58.1	45.3	2.13 (+0.01)	19
October	98 (-5.3)	51.7 (+2.0)	54.3	36.4	4.47 (+2.19)	21
November	60 (+0.4)	41.0 (-2.0)	45.0	31.2	1.76 (-0.65)	15
December	65 (+20.1)	38.6 (-0.5)	41.2	29.4	1.79 (-0.39)	20
Year	1553 (+85.8)	49.1 (+0.5)	50.4	37.8	25.47 (+0.52)	182

(1) Mean of maximum and minimum.
(2) Number of days rainfall was 0.01 inches or more

*Note that a 5 inch (Standard) rain gauge is now in use.

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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 (yd^2)	= 0·8361 m^2
1 acre (ac) (=4840 yd^2)	= 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) (t)
1 pint	= 0·5682 litre (l)
1 gallon (gal) (=8 pints)	= 4·546 litres
1 fluid ounce = 1/20 pint	= 0·02841 litre = 28·41 ml
1 cubic foot	= 28·32 litres

To convert	*Multiply by*
oz ac^{-1} to g ha^{-1}	70·06
lb ac^{-1} to kg ha^{-1}	1·121
cwt ac^{-1} to kg ha^{-1}	125·5
cwt ac^{-1} to t ha^{-1}	0·1255
ton ac^{-1} to kg ha^{-1}	2511
ton ac^{-1} to t ha^{-1}	2·511
gal ac^{-1} to l ha^{-1}	11·233

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

1 lb ac^{-1} = 1·1 kg ha^{-1}
1 gal ac^{-1} = 11 litres ha^{-1}
1 ton ac^{-1} = 2·5 t ha^{-1}

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

1 lb = 0·5 kg
1 lb ac^{-1} = 1 kg ha^{-1}

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

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CONVERSION FACTORS

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 (m^2)	=	1·196 square yards (yd^2)
1 hectare (ha)	=	2·471 acres (ac)
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) (t)	=	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 (ft^3)

To convert	*Multiply by*
g ha^{-1} to oz ac^{-1}	0·01427
kg ha^{-1} to lb ac^{-1}	0·8921
kg ha^{-1} to cwt ac^{-1}	0·007966
t ha^{-1} to cwt ac^{-1}	7·966
kg ha^{-1} to tons ac^{-1}	0·0003983
t ha^{-1} to tons ac^{-1}	0·3983
l ha^{-1} to gal ac^{-1}	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

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