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ROTHAMSTED RESEARCH

Yields of the Field Experiments 1964

Full Table of Content



Yields of the Field Experiments 1964 - Numerical Results

Rothamsted Research

Rothamsted Research (1965) *Yields of the Field Experiments 1964 - Numerical Results ;* Yields Of The Field Experiments 1964, pp 5 - 250 **- DOI: https://doi.org/10.23637/ERADOC-1-160**

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Rothamsted Experimental Station

Harpenden

Lawes Agricultural Trust

NUMERICAL RESULTS

of the

FIELD

EXPERIMENTS

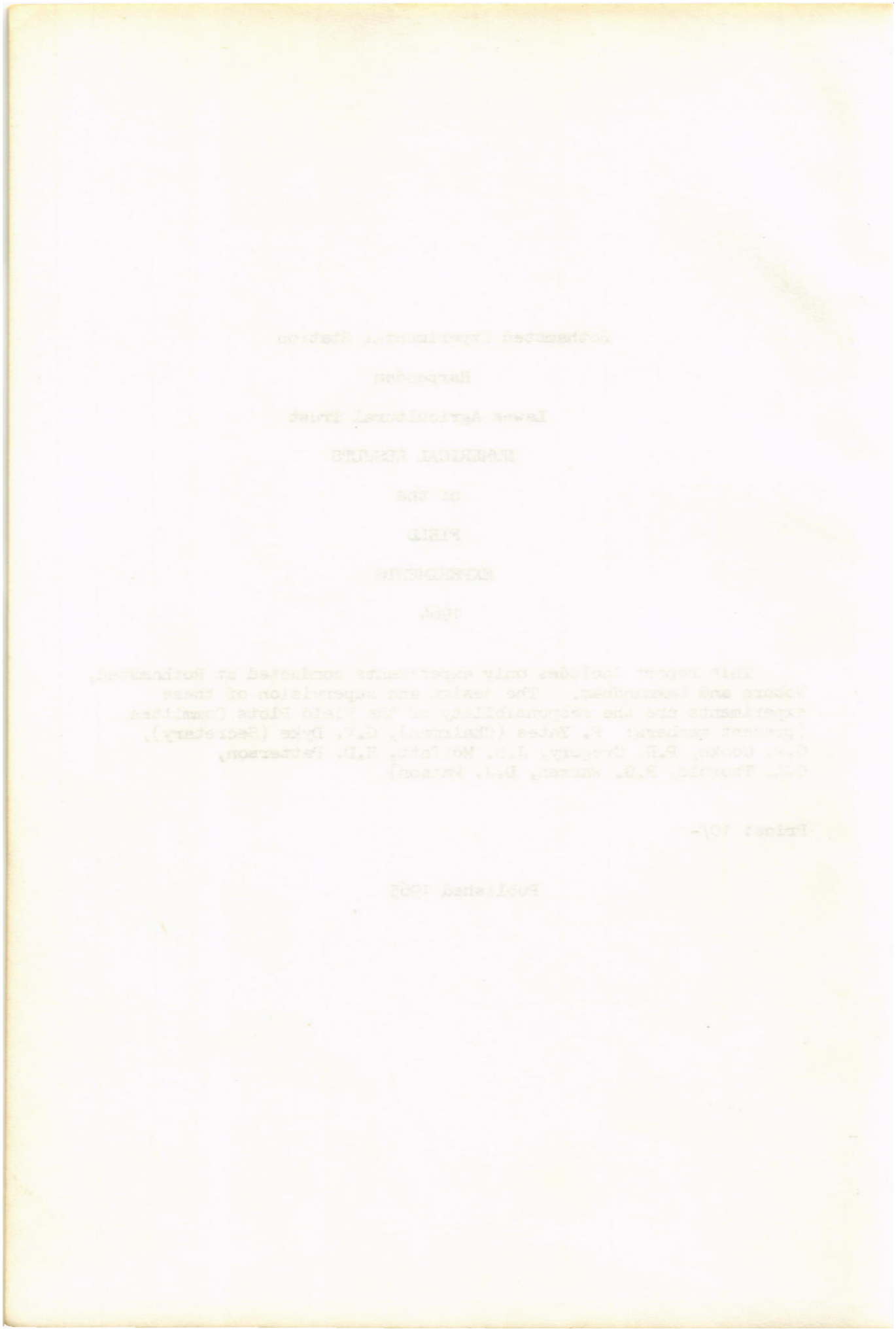
1964

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: F. Yates (Chairman), G.V. Dyke (Secretary), G.W. Cooke, P.H. Gregory, J.R. Moffatt, H.D. Patterson, C.A. Thorold, R.G. Warren, D.J. Watson).

Price: 10/-

Published 1965

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NUMERICAL RESULTS OF THE FIELD EXPERIMENTS, 1964

In this and in future reports the following conventions will be observed unless otherwise stated.

All areas will be in acres.

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

All yields and plant numbers will be per acre.

The following conventions will be 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

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Kale
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% P_2O_5, 10% K_2O), 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 will be given in the 1964 'Results'.

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

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CONTENTS 1964

CLASSICAL EXPERIMENTS*

Broadbalk	Wheat	(BK)	A/1
Hoosfield	Barley	(HB)	A/2
Hoosfield	Wheat after fallow	(HWF)	A/3
Agdell	Grass	(AG)	A/4
Barnfield	Potatoes and mangolds	(BN)	A/5
Park Grass	Hay	(PG)	A/6
Hoosfield Exhaustion Land	Barley	(EX)	A/7
Rothamsted Garden	Clover	(GC)	A/8
Woburn Stackyard	Spring beans and microplots	(WPW & WPB)	A/9
Saxmundham	Rotation 1	(SA)	A/10
Saxmundham	Rotation 2	(SB)	A/11

ROTATION EXPERIMENTS

Ley and arable rotations	Rothamsted	(HLA & FLA)	B/1
Reference plots	Rothamsted & Woburn	(RA,RG & WRA)	B/2
Green manuring	Woburn	(WGM)	B/3
Ley and arable rotations	Woburn	(WLA)	B/4
Market Garden Soil	Woburn	(WMG)	B/5
Irrigation	Woburn	(WIR)	B/6
Residual phosphate rotation	Rothamsted	(RP)	B/7
N levels and residues 2 course rotation	Rothamsted	(NL)	B/8
Cultivation-weedkiller rotation	Rothamsted	(CW)	B/9
Cultivation-weedkiller rotation	Woburn	(WCW)	B/10
Grazed Reference Plots	Rothamsted	(RG)	B/11

CROP SEQUENCE EXPERIMENTS*

	CROPS IN 1964		
Levels of K and Mg Rothamsted & Woburn	Potatoes and sugar beet	(LM & WAC)	C/1
Intensive Barley Growing	Cereals	(IB)	C/2
Long Term Liming Rothamsted & Woburn	Spring beans	(LL & WLL)	C/3
Methods of application of fertiliser 1963-64	Wheat	(AR)	C/4
Methods of application of fertiliser 1964-65 Rothamsted & Woburn	Potatoes	(AY & WBC)	C/5
Levels of N and K	Cocksfoot 7th year	(AF)	C/6
Decline of take-all	Winter wheat	(AO)	C/7
Chemical control of take-all	Winter wheat	(AP)	C/8

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CONTENTS 1964 (CONTD.)

CROP SEQUENCE EXPERIMENTS* (continued)

Cereal disease reference plots	Wheat	(AQ)	C/9
Cutting and virus	Cocksfoot & Lucerne	(CV)	C/10
N and NPK residues	Spring wheat & Kale	(AX)	C/11
Chemical control of wireworm	Spring wheat	(BB)	C/12
Row spacing N and paraquat	Lucerne	(AZ)	C/13
Paraquat	Spring wheat	(BA)	C/14
Irrigation	Potatoes and grass	(IR)	C/15
1-year leys for wheat Woburn	Grass and clover	(WAS)	C/16
Trefoil and ryegrass green manures Woburn	Barley	(WAU)	C/17
Trefoil and ryegrass green manures Woburn	Sugar beet	(WAV)	C/18
Row spacing and fertilisers Woburn	Potatoes	(WBD)	C/19
Soil structure 2 Woburn	Carrots and redbeet		C/20
Soil structure 4 Woburn	Red beet		C/21

ANNUAL EXPERIMENTS*

Winter wheat	N-serve - Rothamsted & Woburn	(RW 101)	Da/1
Winter wheat	Row spacing - Rothamsted & Woburn	(RW401&WW201)	Da/2
Spring wheat	'Scorch' Study - Woburn	(WW 301)	Da/3
Spring wheat	CCC	(RW 501)	Da/4
Spring wheat	Date of sowing and N	(RW 601)	Da/5
Wheat	Varieties and N	(RW 301)	Da/6
Barley	Varieties and N - Rothamsted & Woburn	(RB101&WB101)	Db/1
Barley	Row spacing - Rothamsted & Woburn	(RB201&WB201)	Db/2
Barley	Control of thrips aphids and virus	(RB 301)	Db/3
Spring beans	Row spacing	(RBe 101)	Dc/1
Potatoes	Varieties and chitting - Rothamsted & Woburn	(RP101&WP201)	Dd/1
Potatoes	Times of burning off haulm	(RP 201)	Dd/2
Potatoes	Fungicides	(RP 501)	Dd/3
Potatoes	Control of tuber blight - Woburn	(WP 401)	Dd/4
Carrots	Control of Motley Dwarf virus - Woburn	(WCt 101)	De/1

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CONTENTS 1964 (CONTD.)

ANNUAL EXPERIMENTS*

Sugar beet, carrots, redbeet	Fertilisers and FYM - Woburn	Df/1
Permanent grass	N-serve	Dg/1
Grass	N and K	Dg/2

MISCELLANEOUS DATA

Meteorological records	Rothamsted & Woburn	E/1

*At Rothamsted unless otherwise stated.

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

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64/A/1.1

WHEAT - BROADBALK 1964

(BK)

The 121st year

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

All sections except VA are now sprayed annually with weedkillers.

Cultivations, etc.:

CROPPED SECTIONS. Ground chalk applied to section VA (first half of 5 ton dressing): Sept 19, 1963. Ground chalk applied to plot 19, Section IV at 5 tons: Sept 23. Normal annual dressing of ground chalk applied to plots: Sept 23 and Oct 1. Dung applied: Sept 24. Ploughed: Sept 25 - Oct 2. Ground chalk applied to Section VA (remainder of 5 ton dressing): Oct 11. Autumn fertilisers applied: Oct 15. Seed drilled at 3 bushels: Nov 30. Spring fertilisers applied: Apr 13, 1964. Second dressing of nitrate of soda applied to plot 16: Apr 17. All sections except VA sprayed with dicamba/MCPA ('Banlene' at 4 pints in 40 gals): May 7. Combine harvested: Aug 27. Variety: Squarehead's Master 13/4 (Rothamsted seed from Broadbalk).

FALLOW SECTION. (IV) Ploughed: Sept 25 - Oct 2, 1963, May 4, 1964, July 9.

BROADBALK WILDERNESS. Cultivations etc.:

Ungrazed meadow (north): Shrubs grubbed out: Dec 18 - 31, 1963.

Grazed meadow (centre): Grazed by sheep: Apr 28 - May 7, 1964, June 4 - 9, July 8 - 13, Aug 14 - 18. Grass topped: May 8, June 13, July 13, Aug 18, Nov 12.

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64/A/1.2

SUMMARY OF RESULTS

GRAIN

Section	VA	II	IB	III	VB	IA	
Years after fallow	1	2	3	4	6	13	Mean
2A	15.9	30.1	24.3	23.3	24.9	20.1	24.3
2B	22.7	24.9	21.1	20.9	21.6	19.7	22.3
3	17.7	12.9	13.0	13.8	8.2	7.8	12.8
5	14.7	17.0	15.0	18.5	15.1	7.6	16.0
6	16.1	20.8	17.0	21.4	18.3	14.4	19.1
7	15.1	26.1	23.9	23.6	13.6	23.4	22.1
8	18.5	27.9	27.4	27.3	29.5	25.4	26.5
9	17.8	19.2	15.0	16.4	12.3	14.9	16.5
10	17.4	24.4	17.8	19.7	10.6	10.2	18.7
11	27.7	22.1	6.0	18.6	14.4	21.6	18.6
12	9.5	21.3	19.8	20.9	13.0	17.4	18.3
13	9.6	21.0	18.0	20.2	14.9	19.7	18.2
14	10.9	21.2	18.3	18.8	14.4	18.3	17.9
15	19.5	22.1	19.7	21.9	11.3	14.6	19.6
16	17.6	21.2	20.1	21.4	17.9	18.3	20.1
17	20.7	23.1	20.1	22.9	13.8	15.7	20.7
18	6.1	7.5	4.6	6.7	6.6	4.0	6.3
19	19.5	18.8	16.4	17.9	15.0	14.2	17.5
20		20.0	16.8			10.4	17.2

Mean D.M. %: 87.4

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64/A/1.3

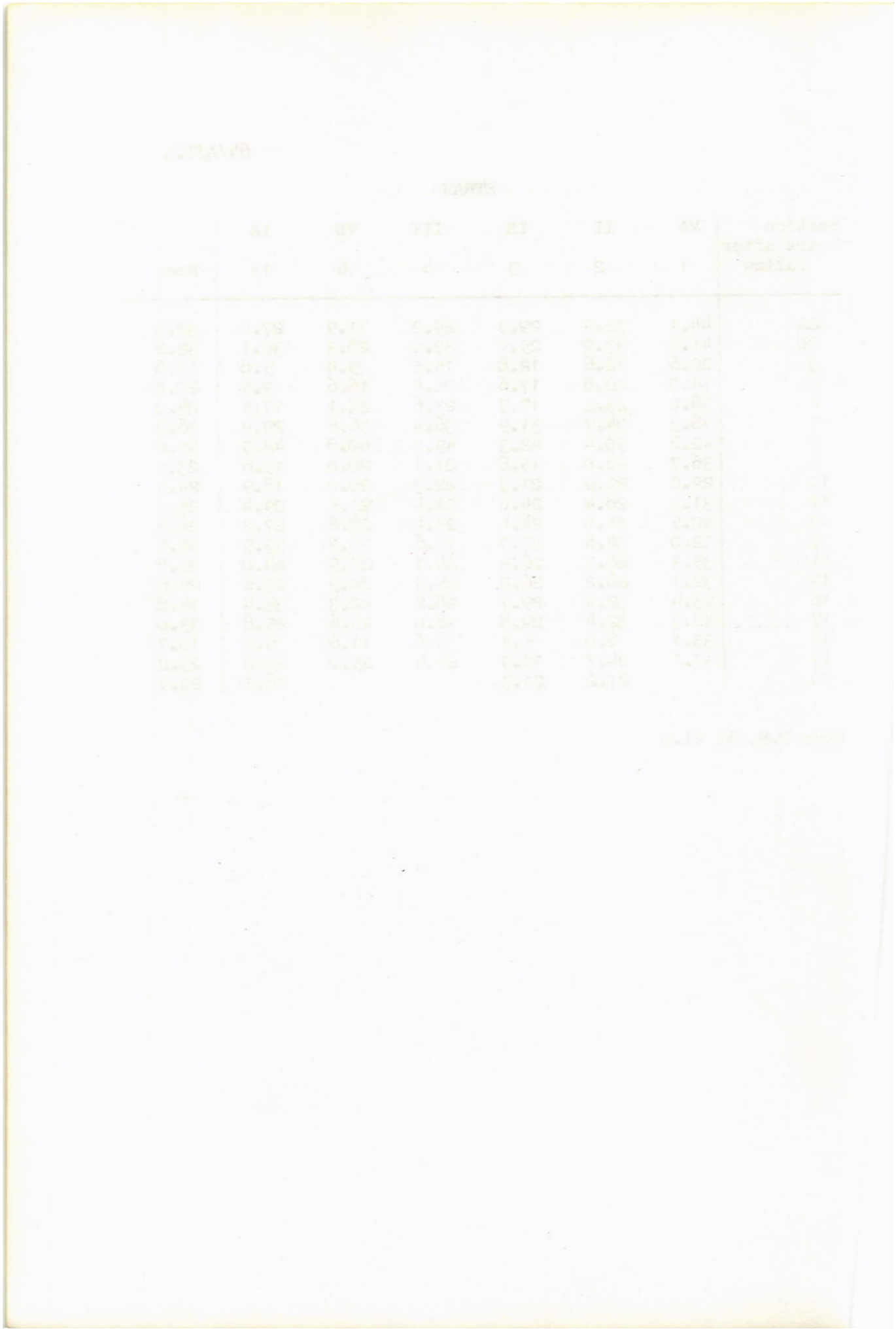
STRAW

Section Years after fallow	VA 1	II 2	IB 3	III 4	VB 6	IA 13	Mean
2A	44.1	32.9	29.9	29.2	31.9	27.0	32.3
2B	41.8	33.9	25.0	32.0	28.3	30.1	32.2
3	22.6	12.6	12.8	15.5	9.4	5.8	13.8
5	34.0	18.8	17.6	20.4	16.6	9.5	20.0
6	38.0	23.5	17.7	23.6	23.1	17.5	24.0
7	48.3	34.7	31.9	36.4	36.6	29.9	36.3
8	42.8	50.4	42.3	45.0	40.8	42.5	45.2
9	36.7	26.0	19.8	21.1	20.0	19.6	23.9
10	29.0	29.9	21.3	22.3	20.0	18.9	24.5
11	31.9	28.4	24.0	21.4	21.5	29.4	25.5
12	40.5	31.0	24.4	23.4	28.6	27.2	28.6
13	32.0	32.6	27.9	33.6	30.3	33.9	32.0
14	35.3	26.3	26.2	24.1	27.9	24.0	26.8
15	32.1	28.2	26.2	25.9	20.9	23.6	26.6
16	53.4	32.9	29.7	28.2	42.3	33.4	34.8
17	42.3	32.4	29.8	36.0	25.6	25.8	33.0
18	33.1	8.0	5.5	6.6	11.6	6.5	10.7
19	37.1	24.7	18.9	24.4	25.0	23.2	25.2
20		27.2	21.3			18.1	23.5

Mean D.M. %: 91.0

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64/A/2.1

BARLEY - HOOSFIELD 1964

(HB)

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

The plots are now split lengthways for a comparison of 2 varieties - Plumage Archer (PA) and Maris Badger (MB). For Maris Badger the rates of application of sulphate of ammonia, nitrate of soda and castor meal are doubled (each supplying 86 lb N). Rates of application of other fertilisers and dung are unchanged.

Cultivations, etc.: Sprayed with dalapon (Dowpon at 8 lb in 40 gals): Oct 7, 1963 and again (at 4 lb in 40 gals): Oct 21. Dung applied: Nov 2. Ploughed: Nov 4. Fertilisers applied: Apr 9, 1964. Seed drilled at 2.75 bushels: Apr 10. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 28. Combine harvested: Aug 31.

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64/A/2.2

SUMMARY OF RESULTS

Plot	GRAIN PA	GRAIN MB	GRAIN Mean	STRAW PA	STRAW MB	STRAW Mean
1 O	5.3	7.4	6.4	2.2	2.5	2.4
2 O	9.1	11.3	10.2	3.8	4.5	4.2
3 O	7.8	8.0	7.9	4.1	2.5	3.3
4 O	10.9	10.8	10.9	4.6	2.8	3.7
5 O	10.4	10.2	10.3	6.1	5.6	5.9
1 A	7.5	11.5	9.5	5.1	5.9	5.5
2 A	17.4	24.4	20.9	10.6	16.0	13.3
3 A	15.3	24.9	20.1	10.6	12.9	11.8
4 A	24.2	37.6	30.9	14.5	22.3	18.4
5 A	24.6	36.5	30.6	18.9	25.7	22.3
1 AA	7.8	10.4	9.1	6.3	8.2	7.3
2 AA	20.1	28.7	24.4	14.5	20.2	17.4
3 AA	13.0	21.9	17.5	10.2	13.7	12.0
4 AA	21.3	40.0	30.7	14.4	28.0	21.2
1 AAS	18.4	18.4	18.4	12.4	14.1	13.3
2 AAS	24.6	28.7	26.7	16.1	20.2	18.2
3 AAS	18.4	31.3	24.9	12.0	19.6	15.8
4 AAS	24.9	37.5	31.2	19.1	26.4	22.8
1 C	19.6	31.6	25.6	10.9	16.1	13.5
2 C	21.3	38.1	29.7	12.8	22.9	17.9
3 C	21.3	37.4	29.4	12.9	22.6	17.8
4 C	23.8	38.8	31.3	16.2	23.8	20.0
7 - 1	11.3	7.6	9.5	5.1	3.2	4.2
7 - 2	33.2	37.0	35.1	22.0	22.9	22.5
6 - 1	4.9	4.4	4.7	2.5	1.6	2.1
6 - 2	6.6	5.1	5.9	3.9	2.2	3.1
1 N	6.0	4.0	5.0	5.3	7.4	6.5
2 N	11.2	17.4	14.3	8.0	11.4	9.7
Mean	15.7	22.2	18.9	10.2	13.8	12.0
Mean D.M.%:	87.4			89.4		

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64/A/3

WHEAT AFTER FALLOW - HOOSFIELD 1964

(HWF)

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

Area of each plot: Squarehead's Master 13/4 - 0.0690.
Rothwell Perdix - 0.0552. Area harvested: 0.0365.

Cultivations, etc.:
Cropped plots. Ploughed: Sept 24, 1963. Seed drilled at 3 bushels: Oct 16. Combine harvested: Aug 28, 1964.
Fallowed plots. Ploughed 3 times: Sept 24, 1963, May 30, 1964, July 27.

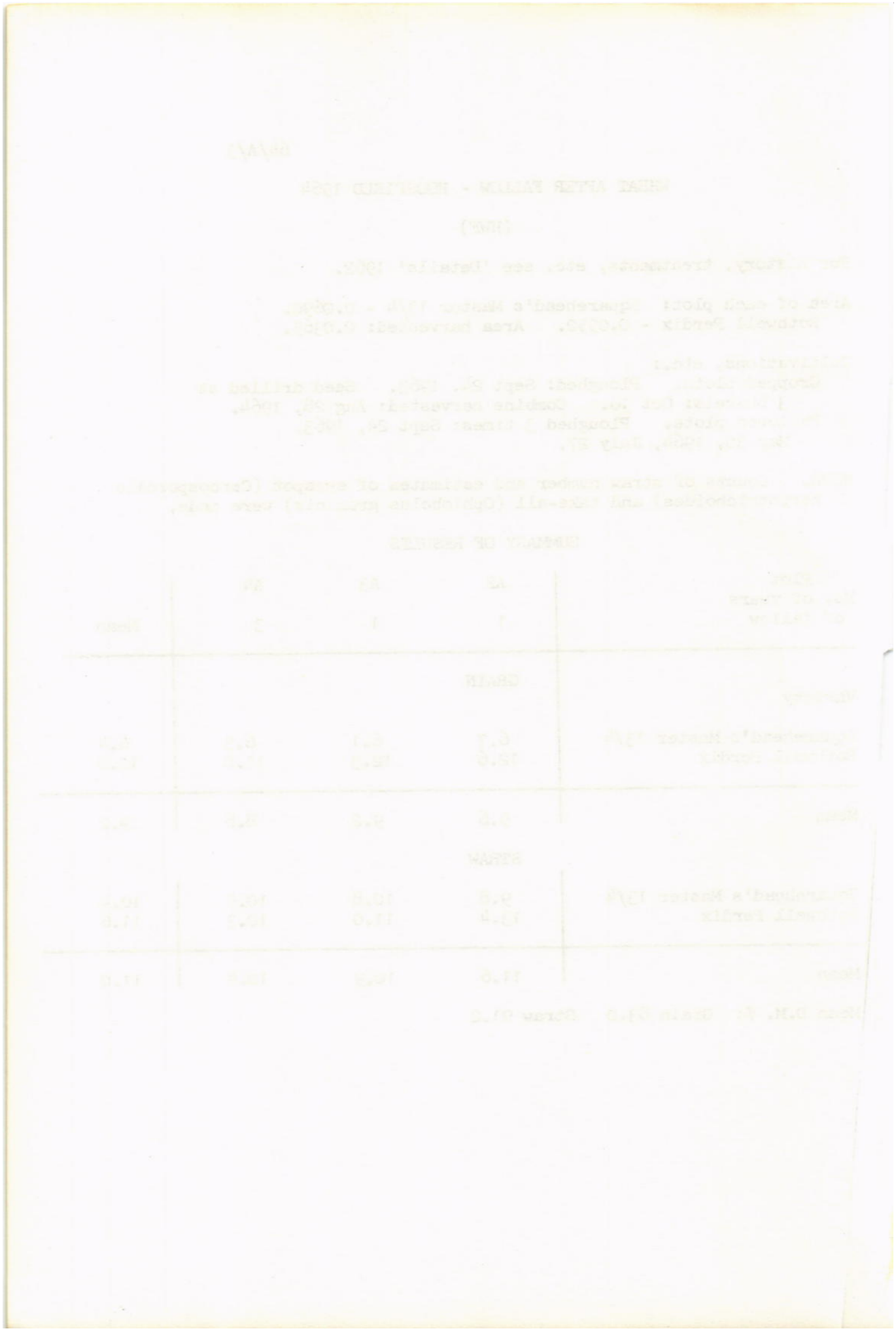
NOTE. Counts of straw number and estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made.

SUMMARY OF RESULTS

Plot	A2	A3	A4	
No. of years of fallow	1	1	3	Mean
	GRAIN			
Variety				
Squarehead's Master 13/4	6.7	6.1	6.3	6.4
Rothwell Perdix	12.6	12.3	11.0	12.0
Mean	9.6	9.2	8.6	9.2
	STRAW			
Squarehead's Master 13/4	9.8	10.8	10.5	10.4
Rothwell Perdix	13.4	11.0	10.3	11.6
Mean	11.6	10.9	10.4	11.0

Mean D.M. %: Grain 83.0 Straw 91.2

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64/A/4.1

GRASS - AGDELL 1964

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

The Cocksfoot leys sown in 1960 were ploughed out and resown with Timothy S51.

The areas in grass and fallow are now each divided into 8 sub plots, which receive PK treatments:-
P2O5: 0 (P0), 4.0 (P1), 8.0 (P2), 16.0 (P4) cwt with basal K
K2O: 0 (K0), 2.5 (K1), 5.0 (K2), 10.0 (K4) cwt with basal P
All P2O5 as triple superphosphate, all K2O as muriate of potash.

Basal dressings: To P plots: as treatment K4.
To K plots: as treatment P4.
The grass areas also received 0.8 cwt N as 'Nitro-Chalk' in seedbed.

Area of each microplot: 0.0180. Area harvested: 0.0084.

Cultivations, etc.: Ploughed: Nov 27 - Dec 2, 1963. PK fertilisers applied: Mar 11, 1964.
Grass: Old grass. Sprayed with dalapon at 11 lb a.e. in 40 gals: Oct 17, 1963. Seed sown at 30 lb, seedbed 'Nitro-Chalk' applied: May 8, 1964. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 10. Cut for silage: Aug 20.
Fallow: Rotary cultivated: July 27, 1964.

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64/A/4.2

SUMMARY OF RESULTS

1ST AND ONLY CUT: DRY MATTER

P K	Plot 5	6	3	4	1	2	Mean
0 4	0.0	0.0	0.9	2.0	7.0	3.5	2.2
1 4	6.3	7.8	8.6	8.0	13.2	12.2	9.3
2 4	6.0	6.1	9.1	10.5	15.9	15.3	10.5
4 4	8.6	8.2	11.5	10.4	18.7	18.9	12.7
4 0	3.0	3.2	4.0	6.6	8.8	8.8	5.7
4 1	7.1	8.3	7.4	11.9	16.7	16.6	11.3
4 2	5.4	11.7	13.3	15.3	16.3	16.4	13.1
4 4	7.5	10.0	7.2	14.7	16.2	19.6	12.5
Mean	5.5	6.9	7.7	9.9	14.1	13.9	9.7

Mean D.M. %: 32.1

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64/A/5.1

MANGOLDS AND POTATOES - BARNFIELD 1964

(BN)

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

In 1964 the rate of application of P205 was increased to 122.5 lb per acre, thus permitting the use of compound 0:14:28 on strips 2, 4 and 6. Granular superphosphate was applied to strips 5 and 7 (at 645 lb per acre, supplying 122.5 lb P205). Potash, sodium and magnesium were applied normally.

Cultivations, etc.: Dung applied: Dec 19, 1963. Ploughed: Jan 17 - Feb 5, 1964. Mineral fertilisers applied to strips: May 13.
Mangolds: N fertilisers applied: May 14, 1964. Seed drilled at 9 lb: May 15. Singled: June 16 - July 2. Sprayed with menazon at 0.38 lb in 35 gals: July 23. Lifted: Oct 8.
Potatoes: N fertilisers applied, all plots rotary cultivated: May 14, 1964. Rotary cultivated 2nd time, potatoes machine planted: May 15. Earthed up: June 29. Sprayed twice with mancozeb at 1.2 lb in 35 gals: July 1 and Aug 6. Haulm destroyed mechanically: Sept 22. Lifted: Sept 29.

Treatment symbols:

		N cwt per acre
N0	=	None
N1	=	0.6
N2	=	1.2
N3	=	1.8

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64/A/5.2

SUMMARY OF RESULTS

MANGOLDS, ROOTS

Strip	N	O	N	A	AC	C
1	0	10.78	21.21	14.31	13.64	8.42
	1		25.51	23.23	14.90	16.33
	2		22.22	20.04	20.04	13.89
	3		22.39	24.92	20.88	27.95
2	0	13.86	21.05	23.57	15.15	15.57
	1		23.74	21.80	19.78	17.43
	2		26.10	17.01	20.54	18.69
	3		31.32	19.78	19.11	17.09
4	0	5.96	10.52	13.64	14.98	8.42
	1		15.49	10.86	16.67	19.36
	2		21.47	16.16	16.92	18.35
	3		22.73	15.57	13.30	19.28
5	0	5.70	7.58	10.78	12.38	8.59
	1		17.01	11.20	11.62	12.46
	2		17.34	11.28	14.82	11.11
	3		31.82	11.79	10.10	12.46
6	0	4.76	9.18	8.84	13.05	8.17
	1		17.59	12.71	12.96	15.74
	2		18.27	13.05	12.71	18.60
	3		20.79	12.96	19.36	19.11
7	0	4.78	14.31	13.55	13.13	11.95
	1		15.91	17.59	13.97	13.64
	2		17.26	14.82	14.31	20.54
	3		20.88	19.53	19.70	20.71
8	0	3.96	5.47	6.90	11.20	10.69
	1		11.20	9.01	11.36	13.30
	2		13.13	9.60	11.70	12.04
	3		17.93	8.08	12.21	12.12
9	0		8.42			
	1		13.97			
	2		16.75			
	3		16.50			

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64/A/5.3

MANGOLDS, LEAVES

Strip	N	O	N	A	AC	C
1	0	4.20	7.74	4.80	5.89	4.04
	1		8.42	6.40	6.23	6.23
	2		7.58	5.81	7.07	5.56
	3		7.24	7.58	6.82	9.09
2	0	5.47	10.02	9.01	7.41	6.65
	1		8.25	7.66	8.33	6.82
	2		10.02	7.49	7.32	7.07
	3		11.11	8.17	8.08	7.32
4	0	2.21	4.88	4.29	5.98	4.04
	1		5.14	3.54	5.89	6.48
	2		7.58	4.97	6.82	6.23
	3		8.33	4.97	5.89	7.66
5	0	1.81	2.69	3.03	4.29	3.20
	1		5.14	3.20	4.80	3.62
	2		6.15	3.45	4.97	4.04
	3		9.43	3.70	3.87	4.38
6	0	1.78	3.45	2.95	4.80	2.78
	1		5.47	3.45	4.21	4.88
	2		6.40	4.13	4.46	5.72
	3		6.23	5.05	6.82	6.15
7	0	1.92	4.46	4.55	5.05	4.04
	1		5.05	5.14	5.30	3.96
	2		5.47	4.29	5.56	6.65
	3		6.73	5.64	6.57	6.99
8	0	1.81	2.53	2.10	4.13	3.62
	1		3.87	3.28	3.70	4.55
	2		4.04	3.62	3.96	3.70
	3		6.06	3.03	4.38	4.21
9	0		3.28			
	1		4.21			
	2		5.72			
	3		5.64			

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64/A/5.4

MANGOLDS, PLANT NUMBER

Strip	N	O	N	A	AC	C
1	0	12.8	24.3	20.4	20.9	23.0
	1		23.0	24.1	20.4	22.6
	2		22.3	21.1	23.4	16.6
	3		21.9	22.3	23.4	22.6
2	0	21.3	22.8	22.3	18.5	19.0
	1		22.1	23.2	18.7	19.4
	2		21.5	18.5	18.7	18.9
	3		21.9	20.6	17.2	17.2
4	0	23.3	21.5	17.2	19.2	19.0
	1		21.1	20.4	18.7	15.7
	2		19.4	20.0	14.3	15.8
	3		20.9	19.2	9.6	14.0
5	0	20.7	21.5	19.0	21.9	23.8
	1		22.4	19.8	16.2	23.9
	2		23.4	20.0	23.2	20.9
	3		21.7	22.3	10.7	24.5
6	0	20.9	15.7	17.5	18.9	21.5
	1		21.9	17.3	17.5	22.4
	2		21.1	14.9	13.8	21.9
	3		20.2	12.3	21.1	22.1
7	0	22.0	23.2	19.2	21.3	22.8
	1		24.3	19.8	15.5	22.3
	2		22.1	18.1	15.1	22.4
	3		21.9	18.1	19.6	21.7
8	0	13.9	20.7	22.4	21.3	21.1
	1		20.9	21.9	20.4	23.4
	2		22.1	21.5	21.9	21.1
	3		22.1	21.5	21.3	22.4
9	0		20.0			
	1		20.6			
	2		21.3			
	3		20.9			

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64/A/5.5

POTATOES, TOTAL TUBERS

Strip	N	O	N	A	AC	C
1	0	6.63	9.02	13.23	10.11	10.26
	1		8.37	11.49	10.23	9.44
	2		11.30	10.96	11.71	10.52
	3		10.23	9.38	11.61	11.46
2	0	6.54	8.94	8.71	9.05	9.60
	1		9.43	9.68	11.42	10.21
	2		10.50	10.75	11.33	13.09
	3		10.57	12.93	14.27	12.92
4	0	3.22	5.51	6.61	6.40	6.44
	1		7.81	6.29	7.51	7.86
	2		4.92	7.62	8.08	8.58
	3		6.06	7.60	7.89	8.33
5	0	2.95	3.22	2.78	3.91	3.70
	1		3.79	2.67	4.04	4.13
	2		4.34	3.64	4.36	4.08
	3		3.47	2.55	3.58	4.04
6	0	3.03	3.79	5.91	6.25	5.91
	1		5.43	5.98	7.03	5.85
	2		4.38	5.96	8.73	6.27
	3		4.52	6.67	7.99	6.65
7	0	3.53	4.21	2.15	2.97	3.18
	1		4.17	2.82	3.24	3.58
	2		3.11	3.09	3.51	4.48
	3		3.89	3.05	3.98	5.70
8	0	2.03	2.15	2.29	3.37	3.68
	1		3.37	2.29	3.68	4.65
	2		1.85	1.79	3.60	3.81
	3		3.51	2.06	3.81	3.01
9	0		3.94			
	1		5.09			
	2		4.04			
	3		4.00			

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64/A/5.6

POTATOES % WARE

Strip	N	O	N	A	AC	C
1	0	86.8	91.6	94.5	87.5	89.2
	1		86.0	89.3	91.7	88.6
	2		90.5	89.6	92.7	91.3
	3		88.3	89.2	91.8	91.7
2	0	83.0	88.4	86.0	87.0	83.3
	1		89.1	85.2	84.3	84.7
	2		88.6	87.3	87.7	88.4
	3		86.4	90.4	86.7	88.9
4	0	80.2	85.1	88.5	83.2	89.9
	1		90.3	85.3	89.6	89.0
	2		87.2	88.1	87.0	86.8
	3		86.8	90.0	87.5	88.6
5	0	83.3	75.8	72.0	80.6	83.0
	1		80.6	73.2	81.8	82.1
	2		80.6	83.8	78.7	80.9
	3		73.3	69.4	80.0	82.3
6	0	77.4	86.7	88.3	87.2	85.4
	1		81.8	85.2	88.3	84.2
	2		81.3	86.2	86.5	91.6
	3		80.5	83.0	86.9	88.6
7	0	78.2	74.0	67.6	68.8	74.8
	1		77.3	73.1	79.2	78.2
	2		68.9	81.6	77.2	80.8
	3		75.1	72.4	77.8	83.4
8	0	76.0	80.4	75.2	81.9	85.7
	1		83.1	69.7	80.0	85.5
	2		70.5	71.8	77.8	86.2
	3		86.8	70.4	82.3	82.5
9	0		89.8			
	1		90.9			
	2		88.5			
	3		87.9			

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64/A/6

HAY - THE PARK GRASS PLOTS 1964

(PG)

The 109th year

For history, treatments etc., see 'Details' 1956.

Cultivations, etc.: Ground chalk applied: Nov 28 - Dec 11, 1963. Mineral fertilisers applied: Dec 18. Nitrogenous fertilisers applied: 1st dressing: Mar 3, 1964, 2nd dressing - Apr 10. Cut twice: June 26 and Nov 5.

SUMMARY OF RESULTS

DRY MATTER

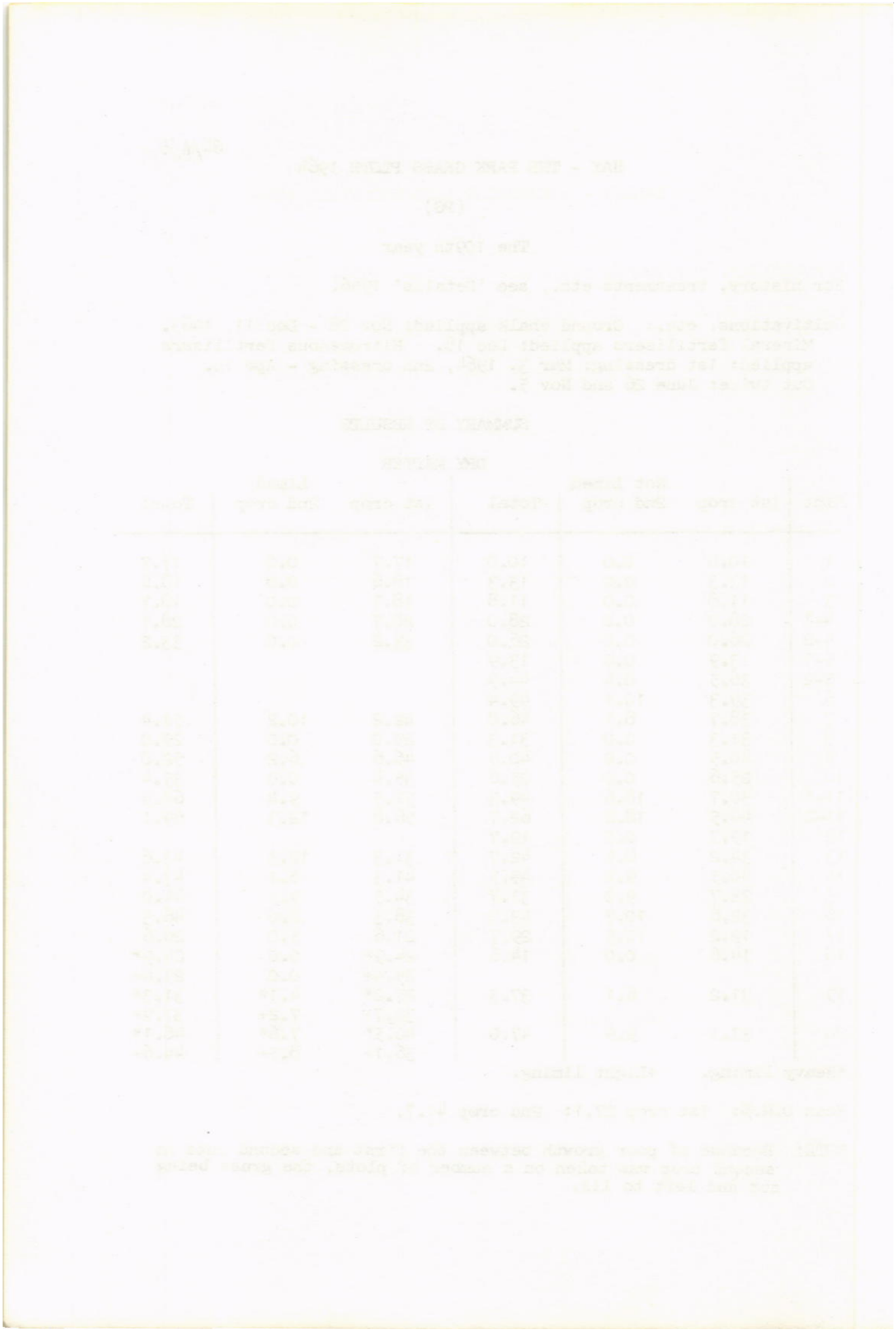
Plot	Not limed 1st crop	Not limed 2nd crop	Not limed Total	Limed 1st crop	Limed 2nd crop	Limed Total
1	10.0	0.0	10.0	17.7	0.0	17.7
2	13.3	0.0	13.3	18.6	0.0	18.6
3	11.8	0.0	11.8	18.7	0.0	18.7
4-1	28.0	0.0	28.0	28.7	0.0	28.7
4-2	26.0	0.0	26.0	33.2	0.0	33.2
5-1	13.9	0.0	13.9			
5-2	36.5	8.4	44.9			
6	39.3	10.1	49.4			
7	38.7	8.1	46.8	42.2	10.2	52.4
8	31.3	0.0	31.3	29.0	0.0	29.0
9	40.5	0.0	40.5	46.6	6.2	52.8
10	25.6	0.0	25.6	35.4	0.0	35.4
11-1	30.7	18.6	49.3	51.5	9.4	60.9
11-2	44.5	18.2	62.7	56.8	12.3	69.1
12	19.7	0.0	19.7			
13	34.2	8.5	42.7	31.3	12.3	43.6
14	40.5	9.0	49.5	41.3	6.1	47.4
15	22.7	9.0	31.7	34.5	9.5	44.0
16	32.6	10.7	43.3	38.3	8.0	46.3
17	19.2	10.5	29.7	21.6	5.0	26.6
18	14.6	0.0	14.6	24.9*	0.0	24.9*
				25.4+	0.0	25.4+
19	31.2	6.1	37.3	27.2*	4.1*	31.3*
				30.7+	7.2+	37.9+
20	37.1	9.9	47.0	40.5*	7.6*	48.1*
				36.1+	8.5+	44.6+

*Heavy liming. +Light liming.

Mean D.M.%: 1st crop 27.1: 2nd crop 41.7.

NOTE: Because of poor growth between the first and second cuts no second crop was taken on a number of plots, the grass being cut and left to lie.

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64/A/7

BARLEY - EXHAUSTION LAND HOOSFIELD 1964

(EX)

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

The basal manuring is now 0.7 cwt N as 'Nitro-Chalk' combine drilled. The variety is now Maris Badger.

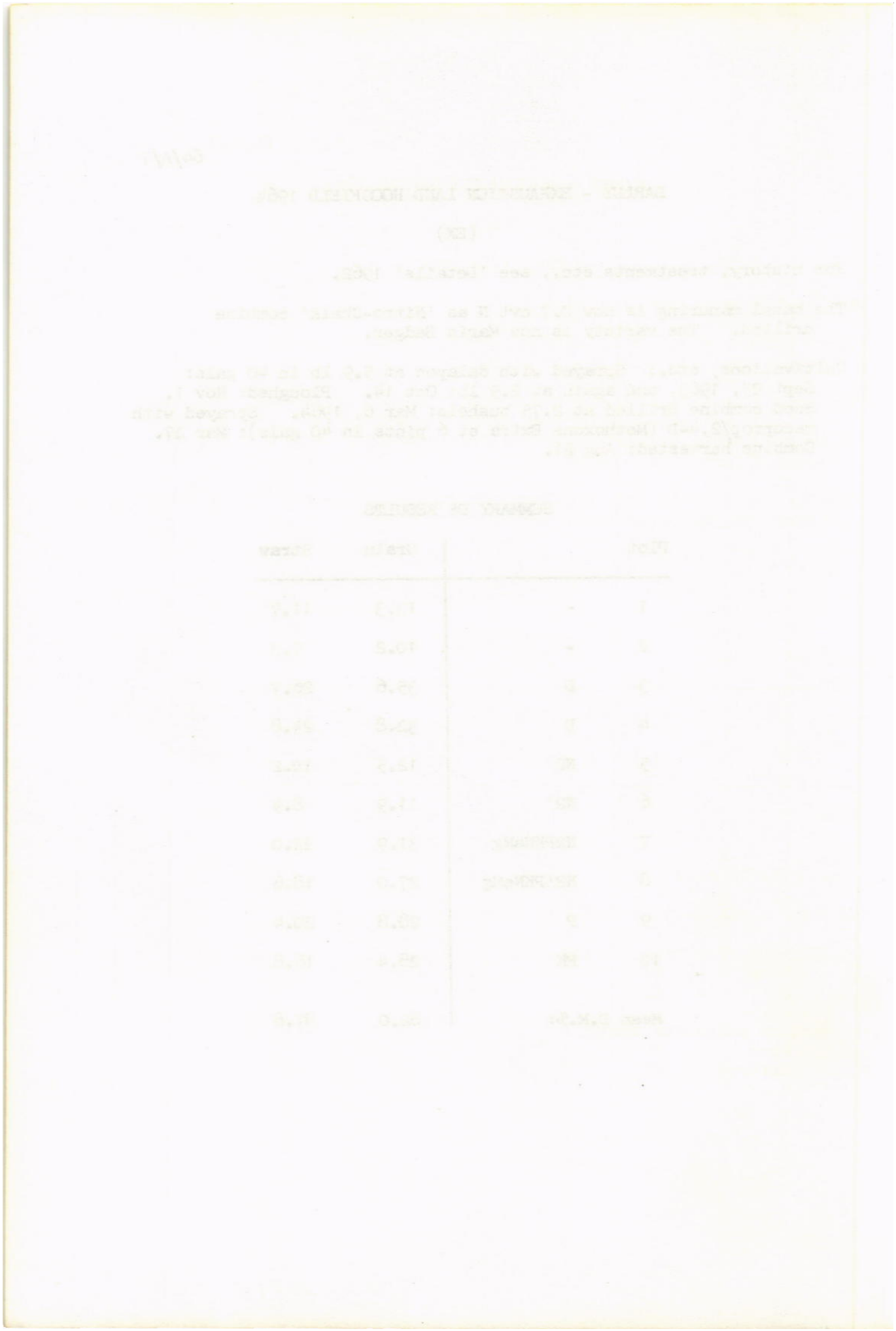
Cultivations, etc.: Sprayed with dalapon at 5.9 lb in 40 gals: Sept 25, 1963, and again at 2.9 lb: Oct 14. Ploughed: Nov 1. Seed combine drilled at 2.75 bushels: Mar 6, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): Mar 27. Combine harvested: Aug 21.

SUMMARY OF RESULTS

Plot		Grain	Straw
1	-	13.3	11.7
2	-	10.2	9.3
3	D	35.6	26.7
4	D	32.8	24.8
5	N2	12.5	10.2
6	N2'	11.9	8.9
7	N2PKNaMg	31.9	22.0
8	N2'PKNaMg	27.0	18.6
9	P	28.8	20.4
10	PK	28.4	16.8
Mean D.M.%:		82.0	87.8

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64/A/8

CLOVER - ROTHAMSTED GARDEN 1964

(GC)

The 111th year

For history etc. see 'Details' 1962.

Cultivations, etc.: Cut: July 13, 1964. Hand dug, muriate of potash applied: July 23.

The growth of clover in the spring was poor and the stand irregular. The plot was also very grassy after the wet year of 1963. It was therefore decided to take a first-cut only and dig the plot, apply K fertiliser and resow.

The dry weather in July continued through August and resowing was therefore postponed until 1965.

SUMMARY OF RESULTS

DRY MATTER

Applied in 1963	Applied in 1961 S0	S1	Mean
K0	20.0	9.6	14.8
K2	66.0	45.3	55.6
Mean	43.0	27.4	35.2

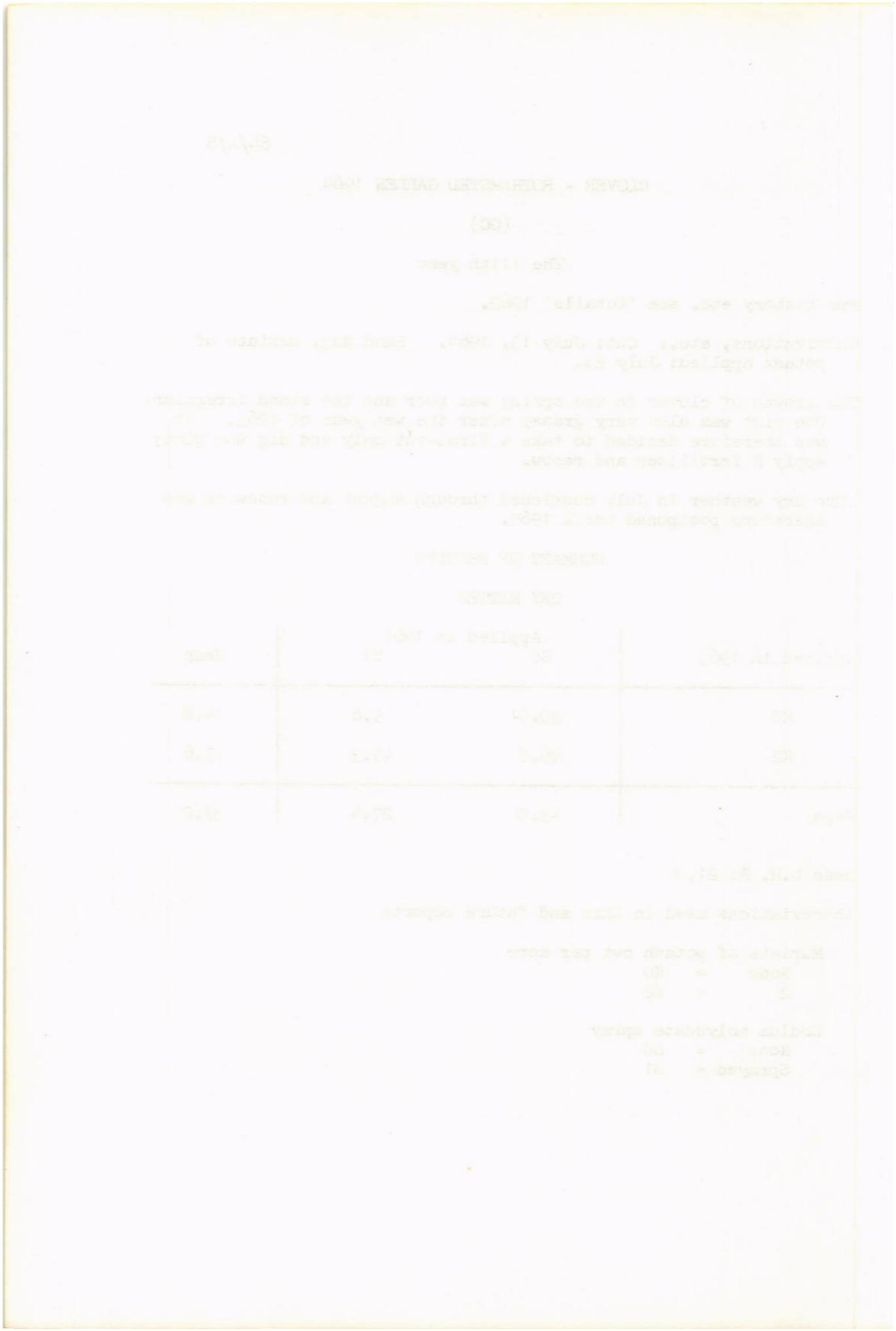
Mean D.M. %: 21.0

Abbreviations used in this and future reports

Muriate of potash cwt per acre
None = K0
2 = K2

Sodium molybdate spray
None = S0
Sprayed = S1

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64/A/9

SPRING BEANS, SITES OF CONTINUOUS WHEAT AND BARLEY EXPERIMENTS

WOBURN STACKYARD 1964

(WPW and WPB)

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

In 1964 all plots were sown with spring beans, except for the area carrying the microplot experiment on soil structure (see 'Results' 64/C/20).

Cultivations, etc.: Ploughed: Oct 22 - Nov 1, 1963. Seed drilled at 200 lb: Mar 13, 1964. Sprayed with simazine at 1 lb in 40 gals: Apr 1. Combine harvested - continuous wheat area: Aug 26, continuous barley area: Sept 1. Variety: Minor Tick.

SUMMARY OF RESULTS

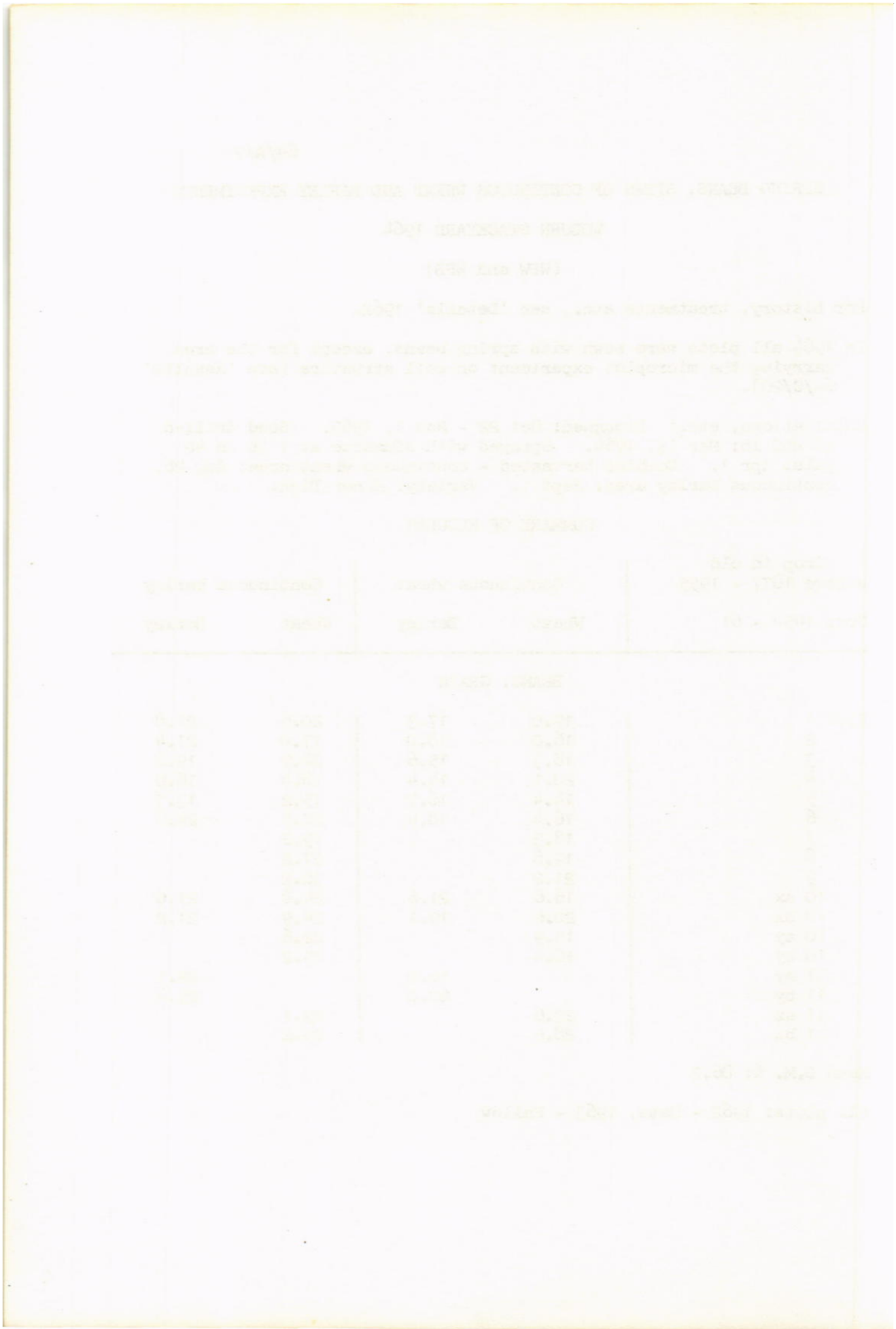
Crop in old scheme 1877 - 1955	Continuous wheat		Continuous barley	
Crop 1959 - 61	Wheat	Barley	Wheat	Barley
BEANS, GRAIN				
Plot 1	19.0	17.3	20.6	21.8
2	16.0	18.0	17.0	21.4
3	18.3	15.6	24.9	19.8
4	20.1	14.4	18.4	16.0
5	14.4	16.7	15.2	13.7
6	16.4	18.4	27.5	24.8
7	18.3		19.2	
8	19.8		27.2	
9	21.2		30.2	
10 ax	16.6	21.6	24.8	21.6
10 bx	20.6	19.1	24.9	21.2
10 ay	15.9		22.6	
10 by	16.4		25.2	
11 ay		16.0		22.5
11 by		20.0		25.4
11 az	23.6		29.1	
11 bz	28.5		29.2	

Mean D.M. %: 86.2

All plots: 1962 - Oats, 1963 - Fallow

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64/A/10.1

SAXMUNDHAM

ROTATION I

(SA)

The long term effects of manuring on a poor clay-loam soil - Harwoods Field 1964, the sixty fifth year. See Rothamsted Report for 1964, pp 228-232.

Rotation: Mangolds and sugar beet, barley, peas, winter wheat.

Design: 4 blocks of 10 plots each, one block for each crop.

Area of each plot: 0.0546. Area harvested: Wheat and barley - 0.0500, sugar beet and mangolds - 0.0114.

Treatments: 6 tons dung (D), 4 cwt bone meal (B) and all combinations of:-

1. Nitrate of soda (N): None, 2 cwt
2. Superphosphate (P): None, 2 cwt
3. Muriate of potash (K): None, 1 cwt.

Basal dressing: None.

Cultivations, etc.:-

Mangolds and sugar beet. Dung applied: Sept 17, 1963. Ploughed: Oct 11. Bone meal applied: Mar 2, 1964. Superphosphate applied: Mar 12. Seed drilled at 7 lb per acre: Apr 13. Nitrate of soda applied: Apr 30. DDT applied at 14 lb powder: May 6. Muriate of potash applied: May 7. Singled: May 22. Sugar beet sprayed (no details): June 27. Sugar beet sprayed with demeton methyl: July 24. Harvested: Sept 30. Varieties: Mangolds - Golden Tankard, sugar beet - Klein E.

Barley. Dung applied: Oct 28, 1963. Ploughed: Oct 29. Bone meal applied: Mar 2, 1964. Superphosphate applied, seed drilled at 2.75 bushels: Mar 11. Nitrate of soda applied: Apr 30. Muriate of potash applied: May 7. Harvested: Aug 13. Variety : Proctor.

Peas. Dung applied: Oct 28, 1963. Ploughed: Oct 29. Bone meal applied: Mar 2, 1964. Superphosphate applied: Mar 12. Nitrate of soda applied: Mar 23. Seed drilled at 12 stones: Apr 9. Muriate of potash applied: Apr 30. Peas ploughed up because of bird damage: June 23. Variety: Lincoln Blue.

Winter wheat. Dung applied: Sept 15, 1963. Ploughed: Sept 16. Bone meal, superphosphate and muriate of potash applied: Sept 26. Seed drilled: Sept 27. Nitrate of soda applied: Mar 23, 1964. Harvested: Aug 5. Variety: Cappelle.

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64/A/10.2

SUMMARY OF RESULTS

Former plot no.	Treatment 1964	Mangolds Roots + tops	Sugar beet Sugar %	Sugar beet Total sugar	Barley Grain	Barley Straw	Wheat Grain	Wheat Straw
			Roots	Tops				
1	D	11.86	9.78 19.9	39.0 3.02	21.3	25.4	25.3	62.6
2	B	3.97	3.20 18.9	12.1 1.26	7.4	8.2	18.2	33.0
3	N	1.65	0.71 17.5	2.5 0.65	11.7	13.2	21.3	33.8
4	P	3.85	3.10 19.0	11.8 1.10	5.2	6.1	19.7	28.5
5	K	0.98	0.65 18.5	2.4 0.43	2.0	3.6	9.9	16.4
6	O	1.41	1.10 18.5	4.1 0.67	2.8	5.9	13.9	21.6
7	PK	2.55	2.28 19.6	8.9 0.94	3.1	6.1	18.1	27.9
8	NK	1.10	0.92 19.6	3.6 0.47	11.1	20.2	20.8	36.3
9	NP	7.62	5.48 19.5	21.4 1.49	14.4	15.5	27.4	38.4
10	NPK	8.25	7.13 20.0	28.5 2.51	16.1	22.4	25.2	43.3
Mean		4.33	3.44 19.1	13.4 1.26	9.5	12.7	20.0	34.2
Mean D.M.%:					84.1	89.3	83.5	87.0

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64/A/11.1

SAXMUNDHAM

ROTATION II

(SB)

The long-term effects of manuring on a poor clay-loam soil - Harwood's Field 1964, the sixty fifth year. See Rothamsted Report for 1964, pp 228-232.

Rotation: Mangolds and sugar beet, barley, peas, winter wheat - two courses present each year (1964 mangolds and sugar beet, winter wheat).

Design: 2 blocks of 7 plots each, one block for each course present.

Area of each plot: 0.0545. Area harvested: Mangolds and sugar beet - 0.0114, winter wheat - 0.0500.

Treatments: 10 tons dung (D), 1.5 cwt nitrate of soda (N), 7.5 cwt superphosphate (P) applied as follows:-

	Plot						
Crop	1	2	3	4	5	6	7
Roots	-	-	NP	D	D	P	P
Barley	-	-	-	-	-	-	N
Peas	-	-	-	-	P	-	-
Wheat	-	D	D	NP	N	DN	D

Basal dressing: None.

Cultivations, etc.:-

Mangolds and sugar beet. Dung applied: Sept 11, 1963. Ploughed: Sept 12. Superphosphate applied: Mar 11, 1964. Seed drilled at 7 lb: Apr 8. Nitrate of soda applied: Apr 30. DDT applied at 14 lb powder: May 5. Singled: May 19 - 27. Sprayed (no details): June 27. Sprayed with demeton methyl: July 24. Harvested: Sept 28. Varieties: Sugar beet - Klein E, mangolds - Golden Tankard.

Winter wheat. Nitrate of soda applied: Mar 23, 1964. Harvested: Aug 5. Variety: Cappelle.

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64/A/11.2

SUMMARY OF RESULTS

Plot no.	Treatment 1964	Mangolds Roots + tops	Sugar beet Roots	Sugar %	Total sugar	Tops
1	-	0.75	0.88	20.0	3.5	0.47
2	-	4.44	2.71	20.9	11.3	0.86
3	NP	12.96	7.78	21.2	32.9	2.20
4	D	7.70	4.42	20.9	18.5	1.18
5	D	10.88	6.13	20.9	25.7	1.81
6	P	9.07	6.76	20.7	28.0	2.00
7	P	8.05	7.03	20.6	29.0	2.16
Mean		7.69	5.10	20.7	21.3	1.53

		Wheat Grain	Straw
1	-	10.6	18.4
2	D	26.7	43.2
3	D	28.0	40.5
4	NP	29.3	45.3
5	N	27.4	46.0
6	DN	33.3	55.6
7	D	30.2	45.2
Mean		26.5	42.0
Mean D.M.%:		83.2	80.2

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64/B/1.1

LEY AND ARABLE ROTATIONS

(HLA and FLA)

Highfield and Fosters Field 1964, the 16th year.

For details of treatments, rotations etc., see 'Details'.

Winter wheat: The rates of N following the arable rotation are now increased as follows:-
Highfield: None, 0.4, 0.8, 1.2 cwt N.
Fosters: None, 0.53, 1.07, 1.60 cwt N.
No weedkiller was applied in 1964.

Barley: Variety is now Maris Badger.

Sugar beet: A test is now made of 1.0 v 1.5 cwt N applied to 1/4 plots as basal 10:10:10 and 'Nitro-Chalk'.

All-grass ley: The seeds mixture is now 5 lb Timothy and 6 lb Meadow Fescue sown at 30 lb, starting with the 1st year ley in 1964.

Lucerne: The second and third year crops are now sprayed with basal paraquat.

Potatoes: In 1964 and future years once grown chitted seed is used.

NOTE: The 3rd year all-grass ley on Fosters failed in spring 1964 and was resown with Italian Ryegrass.

Cultivations, etc.:

HIGHFIELD

1st year Treatment Crops.

All-grass ley. Ploughed twice: Sept 12 and Nov 28, 1963. Basal PK compound applied: Apr 14, 1964. 'Nitro-Chalk' applied: Apr 27. Seeds sown at 30 lb: May 6. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 10. Cut twice: July 22 and Oct 22. NK compound applied after first cut.

Clover-grass ley. Ploughed twice: Sept 12 and Nov 28, 1963. Basal PK compound applied: Apr 14, 1964. Seeds sown at 33 lb: May 6. Sprayed with MCPB/MCPA (New Legumex at 2.5 pints in 40 gals): June 10. Cut twice: July 23 and Oct 22. Muriate of potash applied after first cut.

Lucerne. Ploughed twice: Sept 12 and Nov 28, 1963. Basal PK compound applied, seed drilled at 20 lb: Apr 14, 1964. Cut twice: July 21 and Sept 4.

Hay. Seeds undersown in barley: May 6, 1963. Basal NPK compound applied: Feb 26, 1964. Cut twice: May 26 and July 23. NK compound applied after first cut.

2nd year Treatment Crops.

All-grass ley. Basal PK compound applied: Nov 27, 1963. 'Nitro-

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Chalk' applied: Mar 20, 1964. Cut four times: May 21, June 24, July 22, Oct 22. NK compound applied after first 3 cuts.

Clover-grass ley. Basal PK compound applied: Nov 27, 1963. Cut three times: May 21, June 24, July 23, 1964. Muriate of potash applied after each cut. Topped with mower: Oct 27.

Lucerne. Basal PK compound applied: Nov 27, 1963. Sprayed with paraquat at 2 lb ion in 40 gals: Feb 12, 1964. Cut three times: June 11, July 21, Sept 4.

Sugar beet. Ploughed three times: Aug 20, Oct 12 and Nov 27, 1963. Muriate of potash applied: Feb 21, 1964. Basal NPK compound applied: Apr 3. 'Nitro-Chalk' applied: Apr 7. Seed drilled at 5.25 lb: Apr 9. Springtine cultivated up, because of failure of 1st sowing, re-drilled at 5.25 lb: May 7. Sprayed with DDT at 0.6 lb in 30 gals: May 27. Singled: June 10. Sprayed twice with menazon (Saphicol at 0.75 pints in 35 gals): July 2 and 23. Lifted: Nov 9.

3rd year Treatment Crops.

All-grass ley. Basal PK compound applied: Nov 27, 1963. 'Nitro-Chalk' applied: Mar 20, 1964. Cut four times: May 21, June 24, July 22, Sept 7. NK compound applied after first 3 cuts.

Clover-grass ley. Basal PK compound applied: Nov 27, 1963. Cut four times: May 21, June 24, July 23, Sept 7, 1964. Muriate of potash applied after first 3 cuts.

Lucerne. Basal PK compound applied: Nov 27, 1963. Sprayed with paraquat at 2 lb ion in 40 gals: Feb 12, 1964. Cut three times: June 11, July 21, Sept 4.

Oats. Ploughed: Nov 27, 1963. Seed combine drilled at 4 bushels: Mar 6, 1964. Springtine cultivated up, because of failure of 1st sowing: Apr 27. Re-drilled at 4 bushels: Apr 28. Sprayed with dicamba/MCPA (Banlene at 4 pints in 40 gals): May 28. Combine harvested: Sept 1.

1st Test Crop, Wheat.

Ploughed: Sept 21, 1963. Seed combine drilled at 2.75 bushels: Oct 15. 'Nitro-Chalk' applied: Apr 25, 1964. Combine harvested: Aug 26.

2nd Test Crop, Potatoes.

Dung applied, plots ploughed: Oct 2, 1963. Ploughed 2nd time: Nov 27. Fertilisers applied: May 7, 1964. Potatoes machine planted: May 8. Earthed up: June 23. Sprayed twice with mancozeb at 1.2 lb in 35 gals: July 1 and Aug 6. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 8. Lifted: Sept 16.

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3rd Test Crop, Barley.
Ground chalk applied: Oct 17, 1963. Additional P and K applied: Nov 14. Ploughed: Nov 27. Seed combine drilled at 2.5 bushels: Feb 15, 1964. 'Nitro-Chalk' applied: Feb 20. Combine harvested: Aug 11.

Permanent grasses. 14th, 15th and 16th experimental years permanent (old) grass, all blocks, 14th, 15th and 16th years reseeded grass, blocks 1, 4, 6, 7, 9 and 12. Ground chalk applied to blocks 6 and 7: Oct 17, 1963. Basal PK compound applied: Nov 27. 'Nitro-Chalk' applied to 'all-grass' half plots: Mar 20, 1964. Cut three times: May 25, June 24 and July 23 ('all-grass'), Aug 4 ('clover-grass'). Muriate of potash and NK compound applied to appropriate half plots after each cut. Topped with mower: Oct 27.

NOTE: One whole plot of permanent (old) grass was ploughed up in error in Autumn 1963 and sown to winter wheat. The plot received 'Nitro-Chalk' at 160 lb on April 27, 1964, and was undersown with grass on May 6.

15th year Reseeded grass, Blocks 5 and 8.
Block 5. Basal PK compound applied: Nov 27, 1963. 'Nitro-Chalk' applied: Mar 20, 1964. Cut for silage: May 26. 2nd dressing of 'Nitro-Chalk' applied: May 29. Grazed 4 circuits: June 22 - Aug 26.
Block 8. Basal PK compound applied: Nov 27, 1963. 'Nitro-Chalk' applied: Mar 20 and July 15, 1964. Grazed: 7 circuits: May 5 - Aug 22.

FOSTERS

1st year Treatment Crops.
All-grass ley. Ploughed twice: Sept 12 and Nov 28, 1963. Basal PK compound applied: Apr 14, 1964. 'Nitro-Chalk' applied: Apr 15. Seed sown at 30 lb: May 6. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 10. Cut twice: July 22, Oct 20. NK compound applied after first cut.
Clover-grass ley. Ploughed twice: Sept 12 and Nov 28, 1963. Basal PK compound applied: Apr 14, 1964. Seed sown at 33 lb: Apr 6. Sprayed with MCPB/MCPA (New Legumex at 2.5 pints in 40 gals): June 10. Cut once: July 23. Muriate of potash applied: July 28. Topped with mower: Oct 27.
Lucerne. Ploughed twice: Sept 12 and Nov 28, 1963. Basal PK compound applied, seed drilled at 20 lb: Apr 14, 1964. Cut twice: July 21 and Sept 4.
Hay. Seeds undersown in barley: May 6, 1963. Basal NPK compound applied: Feb 26, 1964. Cut twice: May 27 and July 23. NK compound applied after first cut.

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2nd year Treatment Crops.

All-grass ley. Basal PK compound applied: Nov 27, 1963. 'Nitro-Chalk' applied: Mar 21, 1964. Cut four times: May 21, June 25, July 22, Oct 20. NK compound applied after first 3 cuts.

Clover-grass ley. Basal PK compound applied: Nov 27, 1963. Cut three times: May 21, June 25, July 24, 1964. Muriate of potash applied after each cut. Topped with mower: Oct 27.

Lucerne. Basal PK compound applied: Nov 27, 1963. Sprayed with paraquat at 2 lb ion in 40 gals: Feb 12, 1964. Cut three times: June 11, July 21, Sept 4.

Sugar beet. Ploughed three times: Aug 20, Oct 12, Nov 28, 1963. Muriate of potash applied: Feb 21, 1964. Basal NPK compound applied: Apr 3. 'Nitro-Chalk' applied: Apr 7. Seed drilled at 5.25 lb: Apr 9. Springtine cultivated up, redrilled at 5.25 lb: May 7. Sprayed with DDT at 0.6 lb in 30 gals: May 27. Singled: June 10. Sprayed twice with menazon (Saphicol at 0.75 pints in 35 gals): July 2 and July 23. Lifted: Nov 9.

3rd year Treatment Crops.

All-grass ley. Basal PK compound applied: Nov 27, 1963. 'Nitro-Chalk' applied: Mar 21, 1964. Crop failed, destroyed with paraquat at 4 lb ion in 40 gals: Apr 10. Rotary cultivated twice: Apr 27 and 28. Seed sown at 38.5 lb: May 6. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 10. Cut four times: July 13, Aug 4, Sept 7, Oct 20. NK compound applied after first 2 cuts, (it was intended to plough after the 3rd cut but the land was too hard and by the time ploughing was possible there was enough growth to make a 4th cut).

Clover-grass ley. Basal PK compound applied: Nov 27, 1963. Cut four times: May 21, June 25, July 24, Sept 7, 1964. Muriate of potash applied after first 3 cuts.

Lucerne. Basal PK compound applied: Nov 27, 1963. Sprayed with paraquat at 2 lb ion in 40 gals: Feb 12, 1964. Cut three times: June 11, July 21, Sept 4.

Oats. Ploughed: Nov 26, 1963. Seed combine drilled at 4 bushels: Mar 6, 1964. 'Nitro-Chalk' applied: Mar 9. Sprayed with dicamba/MCPA (Banlene at 4 pints in 40 gals): May 28. Combine harvested: Aug 22.

1st Test Crop, Wheat.

Ploughed: Sept 20, 1963. Seed combine drilled at 2.75 bushels: Oct 15. 'Nitro-Chalk' applied: Apr 14, 1964. Combine harvested: Aug 25.

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2nd Test Crop, Potatoes.

Dung applied, plots ploughed: Sept 26, 1963. Ploughed second time: Nov 28. Fertilisers applied: May 5, 1964. Potatoes machine planted: May 6. Earthed up: June 23. Sprayed twice with mancozeb at 1.2 lb in 35 gals: July 1 and Aug 6. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 8. Lifted: Sept 16.

3rd Test Crop, Barley.

Additional P and K applied: Nov 9, 1963. Ploughed: Nov 26. Seed combine drilled at 2.5 bushels: Feb 15, 1964. 'Nitro-Chalk' applied: Feb 20. Combine harvested: Aug 11.

Permanent grasses.

14th, 15th and 16th years reseeded grass, blocks 1, 3, 6, 8, 9 and 11. Basal PK compound applied: Nov 27, 1963. 'Nitro-Chalk' applied to 'all-grass' half plots: Mar 21, 1964. Cut three times: May 21, June 25 and July 23 ('all-grass'), Aug 4 ('clover-grass'). Muriate of potash and NK compound applied to appropriate half plots after each cut. Topped with mower: Oct 27.

15th year reseeded grass, blocks 5 and 7. Basal PK compound applied: Nov 27, 1963.

Block 5. 'Nitro-Chalk' applied twice: Mar 21 and July 15, 1964. Grazed 7 circuits: May 5 - Aug 20.

Block 7. 'Nitro-Chalk' applied: Mar 21, 1964. Cut for silage: May 27. 2nd dressing of 'Nitro-Chalk' applied: May 28. Grazed 4 circuits: June 22 - Aug 26.

Standard errors per sub-plot. Test crops.

Wheat, grain	Highfield:	4.78 or 9.4% (55 d.f.)
	Fosters:	3.68 or 6.8% (55 d.f.)
Barley, grain	Highfield:	3.54 or 6.4% (23 d.f.)
	Fosters:	2.55 or 4.6% (23 d.f.)

NOTE: For explanation of treatment symbols see page 64/B/1.23.

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64/B/1.6

SUMMARY OF RESULTS

WHEAT 1ST TEST CROP

Treatment crops 1961 - 1963

	Lu	Ley	CG	R	AH
GRAIN					
HIGHFIELD					
			(±2.39)*		
To test crop					
N0	46.3	51.6	38.3	48.1	31.4
N1	61.2	51.3	48.1	49.4	46.6
N2	54.2	53.1	54.0	50.4	54.4
N3	61.7	51.1	55.7	46.9	61.4
Mean	55.8	51.8	49.0	48.7	48.4
FOSTERS					
			(±1.84)*		
To test crop					
N0	47.3	56.1	44.4	54.5	26.7
N1	55.6	57.0	56.5	57.7	45.0
N2	59.6	56.4	58.2	57.1	56.6
N3	58.0	54.0	56.6	55.5	62.8
Mean	55.2	55.9	53.9	56.2	47.8

* For use only in vertical and interaction comparisons

NOTE: N levels are different on AH from remainder. See 64/B/1.2

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64/B/1.7

WHEAT 1ST TEST CROP

Treatment crops 1961 - 1963

	Lu	Ley	CG	R	AH
STRAW					
HIGHFIELD					
To test crop					
N0	42.9	49.7	32.9	53.6	22.5
N1	50.7	52.2	39.9	52.8	35.9
N2	50.6	50.2	43.6	52.7	42.5
N3	55.9	51.8	45.3	53.7	45.4
Mean	50.0	51.0	40.4	53.2	36.6
FOSTERS					
To test crop					
N0	39.0	49.9	33.5	48.8	21.1
N1	50.0	53.0	47.1	55.6	38.2
N2	54.3	55.1	49.5	54.4	47.8
N3	59.4	51.3	54.3	56.8	52.7
Mean	50.7	52.3	46.1	53.9	39.9

NOTE: N levels are different on AH from remainder. See 64/B/1.2

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64/B/1.8

POTATOES 2ND TEST CROP. TOTAL TUBERS

Treatment crops 1960 - 1962

	Lu	Ley	CG	AH	RG	Mean
			HIGHFIELD			
Mean	14.29	16.10	14.99	14.19	16.62	15.24
N: wheat 1963						
N0	14.54	15.47	15.44	14.62	16.00	15.21
N1	14.81	16.43	14.32	12.96	17.02	15.11
N2	13.77	16.08	14.98	14.90	16.31	15.21
N3	14.05	16.43	15.23	14.30	17.13	15.43
N: 1964						
N1	13.39	16.07	14.70	13.86	16.75	14.95
N2	15.20	16.13	15.28	14.53	16.49	15.53
F	14.71	15.77	14.94	14.03	16.43	15.18
D	13.88	16.43	15.04	14.35	16.81	15.30
P1	14.56	16.27	14.78	13.67	16.51	15.16
P2	14.02	15.93	15.20	14.72	16.72	15.32
K1	14.41	15.70	15.04	14.21	16.27	15.13
K2	14.18	16.50	14.94	14.18	16.96	15.35

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64/B/1.9

POTATOES 2ND TEST CROP. TOTAL TUBERS

N: 1963

HIGHFIELD

	N0	N1	N2	N3
N: 1964				
N1	14.97	14.49	15.22	15.13
N2	15.46	15.73	15.20	15.71
F	15.09	15.04	15.04	15.53
D	15.33	15.19	15.37	15.33
P1	15.00	15.09	15.33	15.21
P2	15.43	15.12	15.08	15.64
K1	15.01	15.06	15.40	15.04
K2	15.42	15.17	15.02	15.81

	0	M	P1	P2	K1	K2
N: 1964						
N1	14.86	15.04	14.87	15.04	14.81	15.09
N2	15.49	15.56	15.45	15.60	15.44	15.61
F			15.18	15.18	14.97	15.38
D			15.15	15.46	15.28	15.33
P1					15.09	15.23
P2					15.17	15.47

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64/B/1.10

POTATOES 2ND TEST CROP. TOTAL TUBERS

Treatment crops 1960 - 1962

	Lu	Ley	CG	AH	RG	Mean
			FOSTERS			
Mean	12.75	12.48	13.25	12.64	14.96	13.22
N: wheat 1963						
N0	12.57	12.24	12.88	13.30	14.61	13.12
N1	12.90	12.55	13.34	12.99	15.31	13.42
N2	13.07	12.68	13.25	12.08	14.88	13.19
N3	12.46	12.42	13.51	12.19	15.03	13.12
N: 1964						
N1	12.65	12.41	13.47	12.56	14.81	13.18
N2	12.84	12.54	13.02	12.72	15.11	13.25
F	12.70	12.59	13.44	12.19	14.88	13.16
D	12.80	12.36	13.05	13.09	15.04	13.27
P1	12.84	12.29	12.95	12.33	14.89	13.06
P2	12.66	12.66	13.54	12.95	15.02	13.37
K1	12.66	12.30	13.22	12.51	14.89	13.12
K2	12.84	12.65	13.27	12.77	15.02	13.31

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64/B/1.11

POTATOES 2ND TEST CROP. TOTAL TUBERS

N: 1963

	NO	N1	N2	N3
	FOSTERS			
N: 1964				
N1	12.76	13.51	13.00	13.45
N2	13.48	13.32	13.39	12.79
F	12.87	13.21	13.25	13.32
D	13.38	13.64	13.14	12.92
P1	13.05	13.19	13.26	12.75
P2	13.19	13.65	13.12	13.49
K1	12.91	13.27	13.12	13.15
K2	13.32	13.56	13.26	13.09

	O	M	P1	P2	K1	K2
N: 1964						
N1	13.11	13.25	13.01	13.36	13.26	13.10
N2	13.21	13.28	13.11	13.38	12.97	13.53
F			12.96	13.37	13.17	13.15
D			13.17	13.37	13.06	13.47
P1					13.03	13.09
P2					13.20	13.53

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64/B/1.12

POTATOES 2ND TEST CROP. % WARE

Treatment crops 1961 - 1963

	Lu	Ley	CG	AH	RG	Mean
			HIGHFIELD			
Mean	94.7	95.4	95.3	94.6	95.9	95.2
N: wheat 1963						
N0	94.9	95.2	95.3	94.0	95.6	95.0
N1	95.2	95.2	95.1	94.6	95.8	95.2
N2	94.5	95.0	95.6	94.8	96.2	95.2
N3	94.2	96.0	95.1	95.2	95.9	95.3
N: 1964						
N1	94.6	95.0	94.7	94.0	95.8	94.8
N2	94.8	95.7	95.9	95.3	95.9	95.5
F	95.3	95.6	95.6	94.5	96.1	95.4
D	94.1	95.1	94.9	94.7	95.7	94.9
P1	94.8	95.6	95.0	94.7	95.9	95.2
P2	94.6	95.1	95.6	94.6	95.8	95.1
K1	94.8	95.4	94.9	94.4	95.6	95.0
K2	94.6	95.3	95.7	94.9	96.2	95.3

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64/B/1.13

POTATOES 2ND TEST CROP. % WARE

N: 1963

HIGHFIELD

N: 1964	N0	N1	N2	N3
N1	94.7	94.6	95.1	94.8
N2	95.3	95.7	95.4	95.7
F	95.3	95.4	95.5	95.5
D	94.7	95.0	94.9	95.1
P1	94.9	95.4	95.2	95.2
P2	95.2	94.9	95.3	95.4
K1	94.9	95.1	95.0	95.0
K2	95.0	95.2	95.5	95.6

N: 1964	0	M	P1	P2	K1	K2
N1	95.0	94.6	94.8	94.8	94.7	95.0
N2	95.8	95.2	95.6	95.4	95.4	95.7
F			95.5	95.4	95.2	95.6
D			94.9	94.9	94.8	95.0
P1					95.0	95.4
P2					95.0	95.3

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64/B/1.14

POTATOES 2ND TEST CROP. % WARE

Treatment crops 1961 - 1963

	Lu	Ley	CG	AH	RG	Mean
			FOSTERS			
Mean	93.3	93.4	93.7	93.0	94.3	93.5
N: wheat 1963						
N0	92.7	93.2	93.5	93.9	94.5	93.6
N1	92.9	93.2	93.4	93.1	94.3	93.4
N2	93.7	93.2	93.6	93.2	93.9	93.5
N3	93.9	93.8	94.4	92.0	94.4	93.7
N: 1964						
N1	93.3	93.1	93.7	92.7	93.9	93.3
N2	93.3	93.6	93.8	93.4	94.7	93.8
F	93.2	93.3	93.9	92.9	94.0	93.5
D	93.4	93.4	93.6	93.2	94.5	93.6
P1	93.4	93.5	93.9	93.5	94.6	93.8
P2	93.2	93.2	93.6	92.6	94.0	93.3
K1	92.9	92.9	93.2	93.2	93.9	93.2
K2	93.7	93.8	94.3	92.9	94.6	93.9

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64/B/1.15

POTATOES 2ND TEST CROP. % WARE

N: 1963

	NO	N1	N2	N3
	FOSTERS			
N: 1964				
N1	92.9	93.5	93.5	93.4
N2	94.2	93.3	93.5	94.0
F	93.2	93.1	93.5	94.1
D	93.9	93.6	93.6	93.3
P1	93.7	93.7	93.8	93.9
P2	93.4	93.0	93.3	93.5
K1	93.2	93.3	93.0	93.4
K2	93.9	93.4	94.1	94.0

	O	M	P1	P2	K1	K2
N: 1964						
N1	93.3	93.4	93.5	93.1	93.0	93.5
N2	93.6	93.8	94.0	93.5	93.4	94.1
F			93.8	93.1	93.0	93.9
D			93.7	93.5	93.5	93.8
P1					93.4	94.1
P2					93.0	93.6

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64/B/1.16

BARLEY 3RD TEST CROP

GRAIN

Treatment crops 1959 - 1961

	Lu	Ley	CG	AH	Mean
		HIGHFIELD			
Mean	56.6	57.9	52.9	53.9	55.3
		(±1.77)*			(±0.89)
N0	56.7	57.0	48.8	50.7	53.3
N1	56.6	57.9	50.8	54.6	55.0
N2	56.2	59.6	55.7	56.2	56.9
N3	57.0	57.2	56.4	54.0	56.2
Dung 1963					
0	57.8	56.6	50.7	51.8	54.2
D	55.4	59.2	55.2	56.0	56.5

Excluding AH

Dung 1963	N0	N1	N2	N3	Mean
		(±1.25)			
0	50.9	54.1	56.3	55.7	55.0
D	55.7	55.9	57.6	56.6	56.6

* For use in vertical and interaction comparisons

Mean D.M. %: 80.0

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64/B/1.17

BARLEY 3RD TEST CROP

GRAIN

Treatment crops 1959 - 1961

	Lu	Ley	CG	AH	Mean
		FOSTERS			
Mean	58.0	55.7	53.9	54.7	55.5
		(±1.27)*			(±0.74)
N0	56.0	54.0	50.0	46.2	53.3
N1	58.8	55.8	54.3	-	-
N2	58.9	55.5	55.8	56.2	56.7
N3	58.3	57.3	55.3	56.9	57.0
N4	-	-	-	59.3	-
Dung 1963					
O	58.7	54.8	52.6	53.8	55.0
D	57.2	56.6	55.1	55.6	56.1

Dung 1963	N0	N1	N2	N3	Mean
		Excluding AH			
		(±1.04)			(±0.52)
O	51.4	56.3	56.5	57.3	55.4
D	55.3	56.3	56.9	56.6	56.3
Mean (±0.74)	53.4	56.3	56.7	57.0	55.8

* For use in vertical and interaction comparisons

Mean D.M. %: 82.2

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64/B/1.18

TREATMENT CROPS ARABLE AND HAY ROTATION

HAY: DRY MATTER

N: 1963

Dung 1962	N0	N1	N2	N3	Mean
		HIGHFIELD			
0	104.2	95.1	108.0	93.9	100.3
D	108.6	104.5	100.4	93.4	101.7
Mean	106.4	99.8	104.2	93.6	101.0
		FOSTERS			
0	94.6	92.2	95.6	96.6	94.7
D	93.9	90.4	87.2	86.1	89.4
Mean	94.2	91.3	91.4	91.3	92.1

https://doi.org/10.23637/ERADOC-1-160

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64/B/1.19

TREATMENT CROPS ARABLE AND HAY ROTATION

HIGHFIELD			FOSTERS		
N1	N2	Mean	N1	N2	Mean
		SUGAR BEET			
		ROOTS			
14.81	15.69	15.25	12.37	12.91	12.64
		SUGAR %			
20.3	20.0	20.1	20.2	19.6	19.9
		TOTAL SUGAR			
60.0	62.8	61.4	50.1	50.8	50.4
		TOPS			
6.17	6.48	6.32	5.02	5.59	5.30
		OATS			
		GRAIN			
		22.9			48.4

Oats, grain, mean D.M. %: Highfield 85.9
Fosters 88.6

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64/B/1.20

LUCERNE: DRY MATTER

	HIGHFIELD Dung 1962			FOSTERS Dung 1962		
	O	D	Mean	O	D	Mean
1st year (2 cuts)	40.9	41.5	41.2	30.8	35.6	33.2
2nd year (3 cuts)			67.6			79.1
3rd year (3 cuts)			48.6			62.5

ALL-GRASS LEY: DRY MATTER

	HIGHFIELD Dung 1962			FOSTERS Dung 1962		
	O	D	Mean	O	D	Mean
1st year (2 cuts)	22.6	27.0	24.8	8.4	10.0	9.2
2nd year (4 cuts)			63.8			59.3
3rd year (4 cuts)			66.4			36.8

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64/B/1.21

CLOVER-GRASS LEY: DRY MATTER

	HIGHFIELD Dung 1962			FOSTERS Dung 1962		
	O	D	Mean	O	D	Mean
1st year (1 cut Fosters) (2 cuts Highfield)	17.9	20.4	19.1	3.4	5.8	4.6
2nd year (3 cuts)			48.8			55.4
3rd year (4 cuts)			41.8			48.8

PERMANENT GRASS, CUT FOR SILAGE

DRY MATTER

	N0	N1	Mean
HIGHFIELD			
14th exptl year			
Blocks 9 and 12	34.8	65.2	50.0
Blocks 10 and 11	36.2	65.0	50.6
15th exptl year			
Blocks 5 and 8	34.4	64.0	49.2
Blocks 6 and 7	36.3	66.8	51.5
16th exptl year			
Blocks 1 and 4	39.2	62.5	50.8
Block 2	37.2	61.8	49.5

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

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64/B/1.22

RESEEDED GRASS: DRY MATTER

	Highfield			Fosters		
	N: (per cut) N0	N1	Mean	N: (per cut) N0	N1	Mean
14th exptl year	32.2	67.8	50.0	38.2	62.8	50.5
15th exptl year	39.8	68.0	53.9	50.2	68.2	59.2
16th exptl year	39.2	63.1	51.2	49.7	69.8	59.8

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

	Cut for silage Mean	Grazed estimated from sampling cuts Mean
	HIGHFIELD	
15th exptl year		
Block 5	41.1	20.6*
Block 8		40.2
	FOSTERS	
15th exptl year		
Block 7	43.3	23.6*
Block 5		28.9

* Aftermath grazing

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Treatment symbols used in this and future reports

TREATMENT CROPS

Lu = Lucerne
Ley = Grazed ley
CG = Cut grass
AH = Arable with hay
R = Reseeded grass

WHEAT, 1ST TEST CROP

N cwt per acre

	Highfield		Fosters	
	All except AH	AH	All except AH	AH
N0	0.0	0.0	0.0	0.00
N1	0.3	0.4	0.4	0.53
N2	0.6	0.8	0.8	1.07
N3	0.9	1.2	1.2	1.60

POTATOES, 2ND TEST CROP

N cwt per acre (including basal)

	Highfield	Fosters
N1	0.75	1.00
N2	1.25	1.50

P205 cwt per acre		K20 cwt per acre	
P1	0.9	K1	0.9
P2	1.8	K2	1.8

F = Pk to sub plots without dung
D = Dung 12 tons per acre

BARLEY, 3RD TEST CROP

N cwt per acre

	Highfield	Fosters
N0	0.0	0.0
N1	0.1	0.2
N2	0.2	0.4
N3	0.3	0.6
N4		0.8

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64/B/1.24

SUGAR BEET, TREATMENT CROP

N cwt per acre (including basal)

N1	1.0
N2	1.5

ERRATUM to 'Results' 1963 pages 63/B/1.10, 1.11, 1.14 and 1.15.
Potatoes 2nd test crop Fosters. Levels of N cwt per acre
1963 should read:

1.00 not 0.75
1.50 not 1.25

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REFERENCE PLOTS

ROTHAMSTED (R) GREAT FIELD IV

and

WOBURN (W) STACKYARD SERIES C, 1964

(RA and WRA)

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. For sitka spruce see 63/B/2.

Cultivations, etc.:

Great Field IV (R):-

Winter wheat: Dug by hand: Sept 16, 1963. P,K,Mg,Ca and S applied and seed drilled: Oct 4. First N dressings applied: Mar 10, 1964. Second N dressings applied: Apr 15. Trace element spray applied: Apr 29. Harvested: Aug 14.

Kale: Dung applied: Nov 4, 1963. Dug by hand: Nov 9. P,K,Mg,Ca and S and first N dressings applied: Mar 10, 1964. Rotary cultivated, seed drilled: Apr 8. Second N dressings applied: May 27. Trace element spray applied: June 11. Harvested: Nov 3.

Barley: Dug by hand: Nov 28, 1963. N,P,K,Mg,Ca and S applied, rotary cultivated, seed drilled: Mar 10, 1964. Trace element spray applied: May 23. Harvested: Aug 13.

Grass-clover ley: Undersown in barley: Apr 20, 1963. N,P,K,Mg,Ca and S applied: Mar 10, 1964. Trace element spray applied: Apr 29. Cut four times: Oct 30, 1963, May 20, 1964, July 7 and Sept 7.

Potatoes: Dung applied: Nov 4, 1963. Dug by hand: Nov 8. Mg applied: Mar 10, 1964. First N dressing, P,K,Ca and S applied: Apr 15, 1964. All plots rotary cultivated, setts planted: Apr 29. Second N dressing applied: May 27. Trace element spray applied: June 11. Harvested: Plots receiving no K (where haulm died early) - Aug 8, remainder - Sept 4.

Permanent grass: Dung applied: Jan 24, 1964. P,K and first N dressing applied: Mar 10. Second N dressing applied: May 22. Third N dressing applied: July 16. Cut three times: May 20, July 16, Oct 29.

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Stackyard Series C (W):-

Oats: P, K and first N dressing applied, rotary cultivated, seed drilled: Mar 9, 1964. Second N dressing applied: May 5. Sprayed with mecoprop at 2.4 lb in 50 gals: May 14. Harvested: Aug 10.

Sugar beet: Dung applied, plots dug by hand: Dec 5, 1963. P,K and first N dressing applied, all plots rotary cultivated, seed drilled: Apr 10, 1964. Second N dressing applied: May 29. Singled: May 26. Sprayed four times with dimethoate at 3 fluid oz in 40 gals: June 8, June 25, Aug 6, Aug 21. Harvested: Oct 13.

Barley: P,K and first N dressing applied, all plots rotary cultivated, seed drilled: Mar 9, 1964. Second N dressing applied: May 29. Crop eaten by rooks: July 8.

Grass-clover ley: Undersown in barley: Apr 22, 1963. N,P and K applied: Mar 9, 1964. Cut four times: Oct 22, 1963, May 22, 1964, July 21, Sept 11.

Potatoes: Dung applied, plots dug by hand: Dec 6, 1963. P,K and first N dressing applied, all plots rotary cultivated, setts planted: Apr 10, 1964. Second N dressing applied: May 29. Sprayed with dimethoate at 3 fluid oz in 40 gals: June 8. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 3. Sprayed with dimethoate at 3 fluid oz in 40 gals: July 6. Harvested: Sept 3.

Permanent grass: Dung applied: Jan 26, 1964. P,K and first N dressing applied: Feb 20. Second N dressing applied: May 29. Third N dressing applied: July 23. Cut three times: May 25, July 21 and Oct 30.

Soft fruit: Dung applied: Dec 6, 1963. NPK applied: Feb 20, 1964. Forked over frequently to remove weeds.

Sitka spruce: No spruce litter was applied in 1964. Formalin applied: Dec 17, 1963. All manures (other than N) dug in: Mar 23, 1964. Seed sown: Apr 7. N top-dressed: July 1, 27 and Aug 28.

NOTE. Samples were taken for determination of dry matter of tops and roots separately, and for N, P, K, Ca, Mg in total crop.

Erratum to 'Results' 63/B/2.6: Under Treatments - the spruce litter was applied in 1961, 1962 and 1963.

Standard errors per plot. Sitka spruce:

Mean height:	0.216 inches or 16.7% (13 d.f.)
Plant number:	164.8 per sq yard or 14.7% (13 d.f.)

https://doi.org/10.23637/ERADOC-1-160

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	Total of 3 cuts
None	38.8	47.4	9.46	22.5	18.9	2.7	24.2	24.4	24.4	75.7	4.25	7.4	16.9	3.8	28.1
N1	44.4	56.9	9.90	22.7	19.6	2.2	24.1	19.0	23.1	68.4	5.55	17.7	17.0	5.2	39.9
P	40.5	51.4	15.54	24.7	20.9	4.1	25.4	20.7	15.5	65.7	7.29	9.6	12.3	2.4	24.3
N1P	35.5	50.8	13.54	33.3	27.1	1.1	22.5	13.2	10.1	46.9	5.17	23.3	18.7	5.1	47.1
K	37.3	54.5	7.38	21.8	17.8	4.4	20.2	21.8	15.6	62.0	7.64	8.4	11.7	4.0	24.1
N1K	38.8	52.5	13.98	27.5	22.8	3.4	22.8	25.8	24.4	76.4	8.77	23.9	22.3	9.0	55.2
PK	42.4	62.9	14.24	26.9	24.2	8.5	33.4	36.5	28.9	107.3	10.07	11.9	16.3	3.9	32.1
N1PK	56.1	81.6	13.46	28.1	23.3	5.0	44.2	33.5	31.5	114.2	11.80	26.2	20.7	5.3	52.2
N2PK	48.4	86.6	20.66	36.9	33.9	3.5	42.4	32.1	29.8	107.8	13.11	34.9	24.1	10.7	69.7
D	50.1	71.6	15.62	27.6	23.2	7.9	36.2	32.6	26.6	103.3	11.98	38.7	16.7	4.3	59.7
N1PKD	46.8	89.3	17.10	33.2	33.3	5.2	41.7	33.2	30.5	110.6	15.46	40.0	22.5	6.4	68.9
N2PKD	45.6	86.4	25.70	39.1	38.0	3.8	54.3	30.5	30.5	119.1	16.76	38.9	19.3	7.5	65.7
Mean D.M.%:	81.8	71.6		82.6	66.9	18.1	20.6	20.1	32.2	22.8		21.1	24.2	27.5	24.3

64/B/2.3

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64/B/2.4

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 of 4 cuts	Potatoes: TOTAL TUBERS
None	46.0	54.8	14.84	21.6	19.6	4.2	25.4	24.4	24.2	78.2	5.36
N2PK	40.6	85.1	28.82	47.4	44.1	2.8	36.4	21.8	21.6	82.6	15.19
N2PK Mg Ca	38.7	85.3	22.57	47.5	47.8	2.9	38.9	27.2	21.8	90.8	15.28
N2PK Mg S	41.6	80.4	25.09	45.2	41.6	2.4	39.5	24.1	25.2	91.2	15.02
N2PK Ca S	43.3	91.6	25.87	31.5	28.8	2.8	41.5	29.0	26.7	100.0	14.93
N2PK Mg Ca S	41.2	80.2	27.08	41.5	43.4	4.2	44.6	30.7	30.2	109.7	15.28
N2PK Mg Ca S TE	44.2	84.2	23.88	44.8	45.6	2.6	38.5	32.5	32.5	106.1	14.41
Mean D.M. %:	79.7	70.4		85.3	69.6	18.2	21.7	19.5	31.6	22.8	

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64/B/2.5

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	Potatoes: TUBERS	Permanent grass: DRY MATTER 1st cut	Permanent grass: DRY MATTER 2nd cut	Permanent grass: DRY MATTER 3rd cut	Total of 3 cuts
None	15.3	15.8	11.02			7.3	22.8	22.0	6.4	58.5	3.47		24.8	11.6	2.1	38.5
N1	35.4	29.8	12.47			4.0	28.1	15.9	6.0	54.0	4.40		26.8	14.4	6.5	47.7
P	14.2	15.2	9.90			6.7	23.4	21.8	8.6	60.5	3.55		21.4	10.1	1.5	33.0
N1P	37.9	35.2	10.48			3.8	28.0	13.1	4.8	49.7	4.24		28.8	15.7	5.5	50.0
K	14.9	17.2	11.18			11.4	21.0	26.0	8.4	66.8	5.64		31.7	18.5	2.1	52.3
N1K	35.8	38.4	14.66			6.9	27.3	21.5	8.5	64.2	7.56		38.4	20.6	7.9	66.9
PK	16.1	18.0	11.74			10.9	22.9	29.1	9.0	71.9	6.32		30.2	18.4	2.1	50.7
N1PK	33.8	35.3	17.55			10.3	31.1	18.8	8.2	68.4	9.03		35.7	19.6	7.1	62.4
N2PK	44.1	43.8	18.46			4.4	38.0	17.6	3.9	63.9	10.26		33.5	26.2	10.2	69.9
D	17.2	18.6	15.06			10.4	24.2	28.3	7.5	70.4	10.57		33.9	14.8	2.1	50.8
N1PKD	36.9	37.2	17.82			10.7	36.8	23.0	6.6	77.1	13.12		35.5	22.7	9.3	67.5
N2PKD	42.1	46.1	20.54			7.0	42.4	22.8	6.1	78.3	15.82		32.0	22.9	11.5	66.4
Mean D.M.%:	80.1	58.6				15.8	25.1	26.8	32.6	25.1			25.5	26.3	21.8	24.5

EATEN BY BIRDS

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64/B/2.6

SITKA SPRUCE

Treatment	MEAN HEIGHT: INCHES	PLANT NUMBER: PER SQ YARD
	(±0.153)	(±116.5)
None	1.18 (1)	1114 (2)
PK Mg	1.19	1248
NK Mg	1.33	1263
NP Mg	1.10	1083
NPK	1.36	1068
NPK Mg	1.16 (1)	1004 (2)
NPK Mg F	1.18	1317
C	1.27	1068
C NPK Mg	1.78	1233
L NPK Mg	1.61	972
Mean	1.29	1124

(1) (±0.108) (2) (±82.4)

NOTE: In September many seedlings showed characteristic needle damage caused by 'smog'.

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64/B/3.1

GREEN MANURING EXPERIMENT

(WGM)

Woburn Stackyard - revised 1964.

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

Area of each sub-plot: 0.0195. Area harvested: 0.0146.

Barley will be grown on all plots from 1964 onwards.

Treatments. 1964:
Old fallow plots. N1 N2 N3 N4.
Remainder. All combinations of:-
1. Green manures: none (duplicate plots), trefoil, ryegrass undersown annually (whole plots).
2. N0 N1 N2 N3.

Levels: N0 - none
N1 - 0.3 (cwt N as 'Nitro-Chalk')
N2 - 0.6
N3 - 0.9
N4 - 1.2

Each plot is split into 2, the N levels being paired as follows:-
(N0, N2) (N1, N3) (N2, N4).
All treatments are cumulative. Residual effects of certain past treatments are ascertainable.

Basal dressing: 3 cwt 0:20:20 combine drilled.

Cultivations, etc.:-
Barley after barley (Upper Half): 'Fallow' plots ploughed: Nov 25, 1963. Green manure plots ploughed: Feb 3, 1964.
Barley after sugar beet (Lower Half): Ground chalk applied at 22 cwt: Dec 10, 1963. Ploughed: Jan 3, 1964.
All plots: Seed drilled at 2.75 bushels: Mar 10, 1964. 'Nitro-Chalk' applied: Mar 12. Ryegrass at 40 lb and trefoil at 30 lb undersown: May 6. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals) - except plots undersown with trefoil: May 21. Combine harvested: Aug 22. Varieties: Barley - Maris Badger, trefoil - English, ryegrass - English Leafy Italian.

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64/B/3.2

SUMMARY OF RESULTS

BARLEY AFTER SUGAR BEET

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

N 1964

	N0	N1	N2	N3	Mean
Mean	11.9	18.5	28.4	33.2	23.0
N 1963*					
N0	14.4	20.9	26.0	32.6	23.5
N1	13.6	15.7	29.2	32.7	22.8
N2	9.7	21.5	31.5	33.0	23.9
N3	9.7	15.9	26.9	34.6	21.8
Undersown 1964					
O	13.0	18.8	29.3	32.4	23.4
T	11.2	16.3	28.6	32.8	22.3
R	10.2	20.0	26.4	35.1	22.9
Green manures 1955 - 63					
T	11.0	17.4	24.7	33.5	21.6
R	11.3	15.3	32.8	26.4	21.4
TU	13.7	22.8	33.7	35.6	26.5
RU	11.5	18.5	22.5	37.4	22.5
Dung last applied 1953					
O	13.0	17.4	28.7	31.4	22.6
D	10.7	19.6	28.1	35.0	23.4

T = Trefoil grown as a green manure after early potatoes
R = Ryegrass grown after early potatoes
TU = as T, but with trefoil undersown in the barley
RU = as R, but with ryegrass undersown in the barley.

*N to sugar beet 1963 at 0, 0.67, 1.33, 2.00 cwt N.

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64/B/3.3

BARLEY AFTER SUGAR BEET

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

GREEN MANURES 1955 - 63

Dung last applied 1953	T	R	TU	RU
0	20.2	23.0	26.8	20.5
D	23.1	19.9	26.1	24.4

PLOTS FALLOW UNDER OLD SCHEME

N 1964

	N1	N2	N3	N4	Mean
Mean	14.3	24.4	34.3	37.7	27.7
N 1963*					
N0	12.1	20.8	36.2	43.6	28.2
N1	21.2	25.8	35.1	36.4	29.6
N2	10.1	29.1	25.0	35.0	24.8
N3	13.9	22.1	40.8	36.0	28.2
Dung last applied 1953					
0	17.6	25.0	37.9	39.3	29.9
D	11.1	23.9	30.6	36.2	25.5

*N to sugar beet 1963 at 0, 0.67, 1.33, 2.00 cwt N.

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64/B/3.4

BARLEY AFTER BARLEY

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

N 1964

	N0	N1	N2	N3	Mean
Mean	17.3	26.9	36.2	40.0	30.1
N 1963					
N0	20.2	29.4	33.8	42.1	31.4
N1	17.5	24.6	36.6	41.2	30.0
N2	15.4	28.1	38.2	40.0	30.5
N3	16.0	25.4	36.2	36.8	28.6
Undersown 1964					
O	18.2	28.2	37.9	40.4	31.2
T	14.7	24.6	30.3	39.5	27.3
R	18.1	26.5	38.8	39.9	30.8
Green manures 1955 - 64					
T	13.5	21.6	32.6	37.4	26.3
R	14.6	22.0	34.2	40.5	27.8
TU	26.1	38.9	40.4	41.6	36.7
RU	14.9	25.1	37.7	40.6	29.6
Dung last applied 1952					
O	17.2	26.1	36.5	38.3	29.5
D	17.4	27.6	36.0	41.8	30.7

T = Trefoil grown as a green manure after early potatoes
R = Ryegrass grown after early potatoes
TU = as T, but with trefoil undersown in the barley
RU = as R, but with ryegrass undersown in the barley.

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64/B/3.5

BARLEY AFTER BARLEY

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

GREEN MANURES 1955 - 63

Dung last applied 1952	T	R	TU	RU
0	22.7	28.7	38.5	28.1
D	29.8	27.0	35.0	31.0

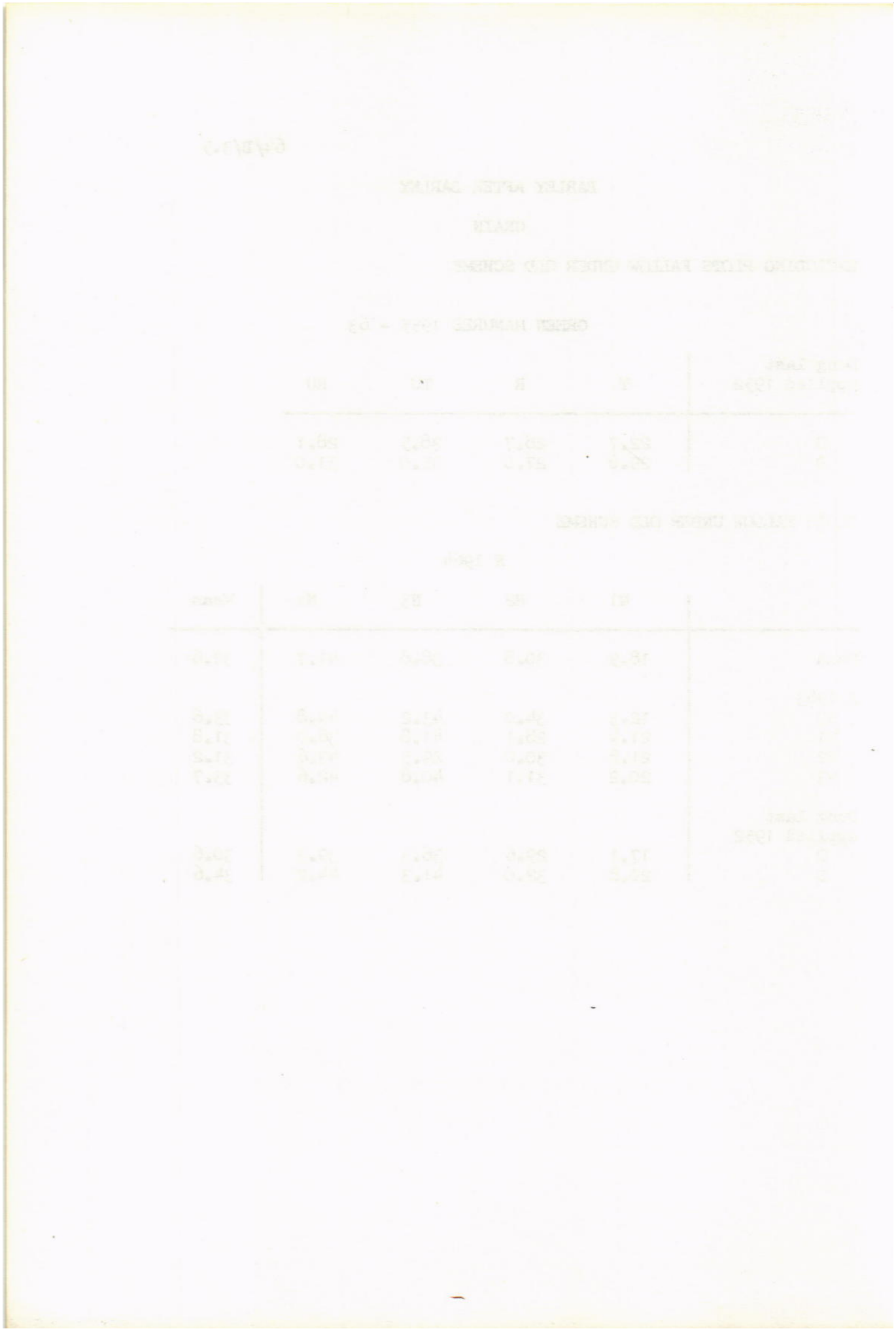
PLOTS FALLOW UNDER OLD SCHEME

N 1964

	N1	N2	N3	N4	Mean
Mean	18.9	30.8	38.8	41.7	32.6
N 1963					
N0	12.3	34.0	43.2	44.8	33.6
N1	21.4	28.1	41.8	36.0	31.8
N2	21.8	30.0	29.5	43.6	31.2
N3	20.2	31.1	40.8	42.6	33.7
Dung last applied 1952					
0	17.1	29.6	36.3	39.3	30.6
D	20.8	32.0	41.3	44.2	34.6

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64/B/4.1

LEY AND ARABLE ROTATIONS

(WLA)

Woburn Stackyard 1964 - the 27th year.

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

Barley and carrots: The varieties are now respectively Maris Badger and Autumn King.

Lucerne: In view of the failure to control stem eelworm (Ditylenchus dipsaci) this crop is now replaced with common sainfoin (Onobrychus sativa), starting with the first year leys in 1964. Inoculated seed at 56 lb.

Corrective K dressings (in cwt K20):-

Continuous rotations	Fertiliser plots	Dung plots
Rotation		
Arable	3	3
Arable with hay	4	3
Lucerne	3	3
Grazed ley	3	0

Alternating rotations Last 2 rotations in order	Fertiliser plots	Dung plots
Arable with hay/ley	3	3
Ley/Arable with hay	3	2
Arable/Lucerne	3	2
Lucerne/Arable	3	2

Revised NPK dressings (in cwt except where stated)

	Fertilisers and time of application	N	P2O5	K2O
Grazed ley 1st year	'Nitro-Chalk', superphosphate and muriate of potash, all in seedbed	0.4	1.5	1.0
	16:0:16 as 2 equal dressings in early and late summer*.	0.8		0.8
2nd and 3rd year	16:0:16 as 3 equal dressings in spring, early and late summer*	1.2		1.2
Sugar beet Test fertilisers				
Grazed ley and lucerne rotations	'Nitro-Chalk' and muriate of potash in seedbed, superphosphate to plough furrow.	0.35	0	0
		0.7	1.5	0.9
Arable and Arable with ley rotations	As above for grazed ley etc.	0.7	0	0
		1.05	1.5	0.9
Basal fertilisers	As above for test fertilisers	0.7	0.9	0.9

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NOTES: (1) The basal fertilisers include 500 lb $MgSO_4$ $7H_2O$.
(2) In 1964 plots not receiving dung received 3.7 cwt K_2O, the K equivalent of the dung used.

* Any dose may be omitted or reduced in wet seasons at the Farm's discretion.

Cultivations, etc.:
Treatment crops.
Ley 1st year. Ploughed twice: Sept 24, 1963 and Jan 3, 1964. Seedbed fertilisers applied: Apr 1. Seed sown: Apr 8. Sprayed with MCPB at 1.9 lb in 40 gals: May 15. Compound fertiliser applied: July 10 and Aug 27. Grazed 5 circuits: June 14 - Oct 16.
Ley 2nd year. Compound fertiliser applied: Mar 20, June 15 and Aug 28. Grazed 6 circuits: May 2 - Oct 24.
Ley 3rd year. Compound fertiliser applied: Mar 20, June 10 and Aug 27. Grazed 4 circuits: May 10 - Oct 20.
Sainfoin 1st year. Ploughed twice: Sept 24, 1963 and Jan 3, 1964. Fertilisers applied: Apr 1. Seed drilled at 56 lb: Apr 8. Sprayed with MCPB at 1.9 lb in 40 gals: May 27. Cut twice: July 23 and Oct 26.
Lucerne 2nd year. Sprayed with paraquat at 1.6 lb in 40 gals: Feb 10, 1964. Fertilisers applied: Mar 20. Sprayed with diquat (Reglone at 4 pints in 60 gals): June 9. Cut 3 times: June 8, July 23, Sept 3.
Lucerne 3rd year. Sprayed with paraquat at 1.6 lb in 40 gals: Feb 10, 1964. Fertilisers applied: Mar 20. Sprayed with diquat (Reglone at 4 pints in 60 gals): June 9. Cut 3 times: June 8, July 23, Sept 3.
Arable rotations.
Potatoes. Ploughed twice: Sept 24, 1963 and Jan 3, 1964. Fertilisers applied: Apr 23. Potatoes machine planted: Apr 29. Earthed up: June 12. Sprayed with mancozeb at 1.6 lb in 50 gals: June 25 and again at 1.2 lb in 40 gals: July 30. Sprayed with diquat (Reglone at 4 pints in 40 gals)*: Sept 2. Lifted: Sept 9.

* Plots 67 and 68 were not sprayed as the haulm was already dead.

Rye. Ploughed: Oct 8, 1963. Seed combine drilled at 3 bushels with PK compound: Oct 18. 'Nitro-Chalk' applied: Mar 26, 1964. Seeds hay mixture undersown on 4 plots: Apr 8. Combine harvested: Aug 25.

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Seeds hay. Seeds undersown in rye at 30 lb: Apr 19, 1963. 'Nitro-Chalk' and PK compound applied: Mar 20, 1964. Compound fertiliser applied: June 5. Cut twice: June 4 and July 28.

Carrots. Ploughed twice: Oct 3, 1963 and Jan 6, 1964. Fertilisers applied: Apr 30. Seed drilled at 3 lb: May 4. Sprayed with menazon at 0.5 lb in 60 gals: May 27 and again twice at 0.5 lb in 50 gals: June 24 and July 29. Lifted: Sept 24.

Test crops.

Sugar beet. Dung equivalent K and half corrective K applied: Oct 2, 1963. Dung applied, all plots ploughed: Oct 4. Half corrective K, basal superphosphate, muriate of potash and test superphosphate applied: Mar 9, 1964. Basal magnesium sulphate, test 'Nitro-Chalk' and muriate of potash applied: Apr 10. Seed drilled at 5 lb: Apr 14. Sprayed with DDT at 0.68 lb in 40 gals: May 21. Singled: May 27. Sprayed with menazon at 0.25 lb in 50 gals: July 27. Lifted: Oct 26.

Barley. Ground chalk applied at 44 cwt: Dec 23, 1963. Ploughed: Jan 3, 1964. Balancing muriate of potash, basal superphosphate and 'Nitro-Chalk' applied: Feb 21. Seed drilled at 2.75 bushels: Mar 10. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 12. Combine harvested: Aug 20.

NOTES: (3) The 3rd year lucerne was infested with stem eelworm and grew poorly throughout the season. The yields are not included in the summary.

(4) Abbreviations for Rotation:
Ley = Grazed ley Lu = Lucerne AH = Arable with hay
AR = Arable with roots.

Standard errors per plot:

Sugar beet.	Roots	Whole plot:	0.673 or 4.3% (4 d.f.)
		1/2 plot:	1.136 or 7.3% (4 d.f.)
		1/4 plot:	0.747 or 4.8% (24 d.f.)
		1/16 plot:	1.590 or 10.2% (32 d.f.)
	Total sugar	Whole plot:	3.04 or 4.9% (4 d.f.)
		1/2 plot:	5.27 or 8.6% (4 d.f.)
		1/4 plot:	3.18 or 5.2% (24 d.f.)
		1/16 plot:	7.00 or 11.4% (32 d.f.)
	Tops	Whole plot:	0.344 or 3.8% (4 d.f.)
		1/2 plot:	0.376 or 4.2% (4 d.f.)
		1/4 plot:	0.426 or 4.7% (24 d.f.)
		1/16 plot:	0.949 or 10.5% (32 d.f.)
Barley.	Grain	Whole plot:	1.34 or 3.1% (4 d.f.)
		1/2 plot:	1.95 or 4.6% (4 d.f.)

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64/B/4.4

SUMMARY OF RESULTS

TREATMENT CROPS

LEY, SHEEP DAYS OF GRAZING

1st year	2nd year	3rd year
1253	1512	1012

SAINFOIN, DRY MATTER

	1st cut	2nd cut	3rd cut	Total
1st year				
Dung in 1959				
-	22.2	10.4		32.6
D	24.6	8.6		33.2
Difference	+2.4	-1.8		+0.6
Lu	22.2	11.0		33.2
AH	24.8	8.0		32.8
Mean	23.5	9.5		33.0

LUCERNE, DRY MATTER

2nd year				
Dung in 1958				
-	9.2	12.2	8.8	30.2
D	13.0	14.4	11.2	38.6
Difference	+3.8	+2.2	+2.4	+8.4
Lu	9.1	9.7	8.0	26.8
AH	13.2	17.0	12.0	42.2
Mean	11.2	13.4	10.0	34.5

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64/B/4.5

LUCERNE, DRY MATTER

	1st cut	2nd cut	3rd cut	Total
3rd year				
Dung in 1960				
-		10.5	6.6	17.1
D		6.9	5.4	12.3
Difference		-3.6	-1.2	-4.8
Lu		5.8	4.0	9.8
AH		11.6	8.0	19.6
Mean		8.7	6.0	14.7

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TREATMENT CROPS

	POTATOES		RYE	
	TOTAL TUBERS:	% WARE	GRAIN:	STRAW
Dung				
-	10.64	94.8	39.7	36.6
D*	11.36	94.0	43.0	39.6
Difference	+0.72	-0.8	+3.3	+3.0
Ley	12.34	94.0	42.2	38.8
Lu	11.87	96.4	40.0	37.4
AH	9.68	92.0	40.9	37.2
AR	10.12	95.3	42.3	38.8
Mean	11.00	94.4	41.4	38.1

HAY

YIELD, DRY MATTER

	1st cut	2nd cut	Total
Dung in 1960			
-	44.6	17.0	61.6
D	46.8	17.7	64.5
Difference	+2.2	+0.7	+2.9
Lu	43.6	15.9	59.5
AH	47.8	18.8	66.6
Mean	45.7	17.4	63.1

* Dung applied: Potatoes for test crop sugar beet in 1962
Rye for test crop sugar beet in 1961

Mean D.M. %: Rye, Grain: 84.7
Straw: 87.3

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64/B/4.7

CARROTS

	Roots	Tops
Dung in 1960		
-	15.59	4.56
D	15.08	4.06
Difference	-0.51	-0.50
Ley	17.74	5.30
AR	12.93	3.33
Mean	15.34	4.31

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64/B/4.8

1ST TEST CROP

SUGAR BEET

ROOTS

Previous rotation

		Ley	Lu	AH	AR	Mean
Mean	(±0.476)	17.47	15.27	13.45	16.39	15.65
-	(±0.741)*	17.79	14.92	13.04	15.92	15.42
D		17.15	15.63	13.86	16.86	15.87
Difference	(±1.136)	-0.64	+0.71	+0.82	+0.94	+0.45
Response to additional N						
			(±0.528)			(±0.264)
-		+0.52	+0.46	+1.11	-1.13	+0.24
D		+0.45	-0.89	+0.84	+0.62	+0.25
Response to additional K20						
			(±0.528)			(±0.264)
-		+0.44	+0.98	-0.23	+0.79	+0.50
D		-0.31	+0.87	+0.60	-1.65	-0.12

* For use in horizontal and diagonal comparisons only

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1ST TEST CROP

SUGAR BEET

SUGAR %

Previous rotation

	Ley	Lu	AH	AR	Mean
Mean	19.6	19.9	19.4	19.5	19.6
-	19.8	20.1	19.6	19.6	19.8
D	19.4	19.8	19.3	19.4	19.5
Difference	-0.4	-0.3	-0.3	-0.2	-0.3
Response to additional N					
-	-0.4	0.0	-0.5	-0.6	-0.3
D	-0.5	-0.4	-0.5	-0.6	-0.5
Response to additional K20					
-	+0.1	0.0	-0.1	0.0	-0.1
D	-0.4	+0.2	+0.4	+0.4	+0.1

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1ST TEST CROP

SUGAR BEET

TOTAL SUGAR

Previous rotation

		Ley	Lu	AH	AR	Mean
Mean	(±2.15)	68.5	60.9	52.2	63.9	61.4
-	(±3.40)*	70.4	60.0	51.0	62.5	61.0
D		66.6	61.8	53.4	65.4	61.8
Difference	(±5.27)	-3.8	+1.8	+2.4	+2.9	+0.8
Response to additional N						
			(±2.25)			(±1.13)
-		+0.6	+1.8	+3.3	-6.6	-0.2
D		0.0	-4.8	+1.6	+0.4	-0.6
Response to additional K20						
			(±2.25)			(±1.13)
-		+2.1	+4.0	-1.0	+2.8	+1.9
D		-2.3	+4.1	+3.6	-5.2	0.0

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64/B/4.11

1ST TEST CROP

SUGAR BEET

TOPS

Previous rotation

		Ley	Lu	AH	AR	Mean
Mean	(±0.243)	10.49	8.07	8.37	9.18	9.03
-	(±0.308)*	11.27	7.72	8.10	9.54	9.16
D		9.72	8.42	8.63	8.82	8.90
Difference	(±0.376)	-1.55	+0.70	+0.53	-0.72	-0.26
Response to additional N						
			(±0.301)			(±0.151)
-		+0.66	+0.91	+0.82	-0.40	+0.50
D		+0.38	+0.06	+0.74	+0.02	+0.30
Response to additional K20						
			(±0.301)			(±0.151)
-		+0.58	+1.04	+0.10	+0.52	+0.56
D		0.00	+0.62	+0.32	-0.56	+0.09

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64/B/4.12

1ST TEST CROP

SUGAR BEET

Plots receiving no additional N or K

Previous rotation

		Ley	Lu	AH	AR	Mean
			ROOTS			
Mean	(±0.696)	17.07	15.18	12.54	16.76	15.39
-	(±0.984)*	16.73	14.63	12.55	15.95	14.96
D		17.41	15.73	12.54	17.56	15.81
Difference	(±1.459)	+0.68	+1.10	-0.01	+1.61	+0.85
			SUGAR PERCENTAGE			
Mean		19.8	20.0	19.6	19.6	19.7
-		19.8	20.1	19.9	19.7	19.9
D		19.8	19.9	19.3	19.4	19.6
Difference		0.0	-0.2	-0.6	-0.3	-0.3
			TOTAL SUGAR			
Mean	(±3.09)	67.7	60.6	49.1	65.6	60.8
-	(±4.38)*	66.3	58.6	49.8	63.2	59.5
D		69.1	62.7	48.5	68.1	62.1
Difference	(±6.56)	+2.8	+4.1	-1.3	+4.9	+2.6
			TOPS			
Mean	(±0.340)	10.03	7.29	7.80	9.36	8.62
-	(±0.480)*	10.27	6.89	7.56	9.30	8.50
D		9.80	7.69	8.03	9.42	8.74
Difference	(±0.643)	-0.47	+0.80	+0.47	+0.12	+0.24

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64/B/4.13

1ST TEST CROP

SUGAR BEET

Previous rotation

	Ley	Lu	AH	AR	Mean
		ROOTS			
			(±1.546)*		
-	17.25	15.34	13.47	15.81	15.47
P	17.70	15.20	13.43	16.97	15.82
Difference (±0.562)	+0.45	-0.14	-0.04	+1.16	+0.35 (±0.281)
		SUGAR PERCENTAGE			
-	19.6	20.0	19.4	19.5	19.6
P	19.6	19.9	19.4	19.5	19.6
Difference	0.0	-0.1	0.0	0.0	0.0
		TOTAL SUGAR			
			(±7.13)*		
-	67.7	61.3	52.2	61.7	60.8
P	69.3	60.5	52.1	66.2	62.0
Difference (±2.47)	+1.66	-0.8	-0.1	+4.5	+1.2 (±1.24)
		TOPS			
			(±0.575)*		
-	10.55	8.20	8.48	9.07	9.08
P	10.44	7.94	8.25	9.29	8.98
Difference (±0.335)	-0.11	-0.26	-0.23	+0.22	-0.10 (±0.168)

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64/B/4.14

2ND TEST CROP

BARLEY

Previous rotation

		Ley	Lu	AH	AR	Mean
			GRAIN			
-	(±1.36)*	46.2	46.0	42.2	40.8	43.8
D		44.4	44.0	40.0	38.4	41.7
Mean	(±0.95)	45.3	45.0	41.1	39.6	42.7
Difference	(±1.95)	-1.8	-2.0	-2.2	-2.4	-2.1 (±0.97)
			STRAW			
-		33.6	31.7	29.6	30.4	31.3
D		34.0	34.7	29.4	36.6	33.7
6						
Mean		33.8	33.2	29.5	33.5	32.5
Difference		+0.4	+3.0	-0.2	+6.2	+2.4

* For use in horizontal and diagonal comparisons only

Mean D.M.%: Grain 84.4
Straw 83.4

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64/B/5.1

WOBURN MARKET GARDEN EXPERIMENT

(WMG)

Organic manures, N, P and K - Lansome Field 1964, the 23rd year of the experiment, the fourth year with revised treatments.

Carrots: The nitrogen is now applied at none, 0.45, 0.9 cwt N. All fertilisers are applied in the seedbed.
Globe beet: The seed dressing test is discontinued, all seed now being dressed with BHC/organo-mercury dressing. All fertilisers are now applied in the seedbed.

Area of each sub plot: 0.0063. Area harvested: Leeks - 0.0022, carrots - 0.0017, globe beet - 0.0017.

NOTE: The 1964 - 65 leeks grew poorly and were lifted without weighing to clear the ground early in preparation for microplots 1965.

Cultivations, etc.:
Leeks 1963 - 64. Dung and NPK applied: Aug 7, 1963. Second half of NPK applied, leeks planted: Aug 8. Harvested: 1st lifting - Feb 24, 2nd lifting - Mar 23, 1964.
Carrots. Dung applied, plots ploughed: Jan 9, 1964. Fertilisers applied: Apr 2. Seed drilled at 5.5 lb: Apr 3. Sprayed with menazon at 0.7 pints in 60 gals: May 27. Lifted - 1st harvest: July 14, 2nd harvest: Aug 5.
Globe beet. Ground chalk applied at 23 cwt, dung applied, plots ploughed: Apr 15, 1964. Fertilisers applied: Apr 27. Seed drilled at 11 lb: May 4. Sprayed with DDT (Arkotine DDT at 3 pints in 40 gals): May 21. Singled: June 16 - 30. Lifted - 1st harvest: July 22, 2nd harvest: Aug 10.

NOTE: The eight plots on the western side of the experiment were affected by faulty drilling and yields were estimated from reduced areas.

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Standard errors per plot.

Carrots: Graded Produce: 1st harvest: 1.307 or 15.0% (11 d.f.)
2nd harvest: 1.909 or 9.9% (11 d.f.)
Mean of 2 harvests: 1.232 or 8.8% (11 d.f.)

Tops: 1st harvest: 1.708 or 17.9% (11 d.f.)
2nd harvest: 1.382 or 12.0% (11 d.f.)
Mean of 2 harvests: 1.177 or 11.2% (11 d.f.)

Globe Beet: Total Produce: 1st lifting: 1.036 or 9.6% (11 d.f.)
2nd lifting: 2.794 or 19.3% (11 d.f.)
Mean of 2 liftings: 1.794 or 14.2% (11 d.f.)

Total Saleable Roots: 1st lifting: 0.671 or 13.4% (11 d.f.)
2nd lifting: 2.103 or 22.1% (11 d.f.)
Mean of 2 liftings: 1.280 or 17.6% (11 d.f.)

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64/B/5.3

SUMMARY OF RESULTS

LEEKS 1963 - 1964. 1ST LIFTING. SALEABLE PRODUCE

Dung	Organic manure applied 1942-61	Mean	Fertiliser None	Fertiliser N1P1K1
10	D1	2.71	2.84	2.58
20	D2	2.64	2.96	2.31
10	C1	2.72	2.56	2.88
20	C2	2.66	3.22	2.11
	D1+C1	2.72	2.70	2.74
	D2+C2	2.65	3.09	2.21
Mean		2.68	2.90	2.47

NPK	
111	2.21
111*	1.91
211	2.01
211*	2.26
112	2.56
112*	2.51
212	0.95
212*	2.56
Mean	2.12

* NPK half ploughed in, half in seedbed.

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64/B/5.4

LEEKS 1963 - 1964. 2ND LIFTING. SALEABLE PRODUCE

Dung	Organic manure applied 1942-61	Mean	Fertiliser None	Fertiliser N1P1K1
10	D1	3.32	3.62	3.02
20	D2	3.60	4.00	3.22
10	C1	3.56	3.30	3.82
20	C2	2.95	3.30	2.61
	D1+C1	3.44	3.46	3.42
	D2+C2	3.28	3.64	2.91
Mean		3.36	3.55	3.16

NPK	
111	2.61
111*	3.12
211	2.76
211*	2.91
112	2.51
112*	3.12
212	2.11
212*	2.96
Mean	2.76

* NPK half ploughed in, half in seedbed.

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64/B/5.5

LEEKS 1963 - 1964. MEAN OF 2 LIFTINGS. SALEABLE PRODUCE

Dung	Organic manure applied 1942-1961	Mean	Fertiliser None	Fertiliser N1P1K1
10	D1	3.01	3.23	2.80
20	D2	3.12	3.48	2.76
10	C1	3.14	2.93	3.35
20	C2	2.81	3.26	2.36
	D1+C1	3.08	3.08	3.08
	D2+C2	2.96	3.37	2.56
Mean		3.02	3.22	2.82

NPK	
111	2.41
111*	2.52
211	2.38
211*	2.58
112	2.54
112*	2.82
212	1.53
212*	2.76
Mean	2.44

* NPK half ploughed in, half in seedbed.

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64/B/5.6

CARROTS. GRADED PRODUCE. ROOTS

Dung	Organic manure applied 1942-62*	Mean	Fertiliser None	Fertiliser N1P1K1
		1ST HARVEST		
		(±0.654)	(±0.924)	
10	D1	8.98	9.85	8.11
20	D2	8.98	7.60	10.36
10	C1	8.15	8.20	8.10
20	C2	9.24	8.25	10.23
		(±0.462)	(±0.654)	
	D1+C1	8.56	9.02	8.10
	D2+C2	9.11	7.92	10.30
Mean		8.84	8.48	9.20
			(±0.462)	

NPK	
111	8.99
211	8.35
112	8.53
212	7.80
Mean	8.42

* Last applied to early potatoes in 1962.

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64/B/5.7

CARROTS. GRADED PRODUCE. ROOTS

Dung	Organic manure applied 1942-62*	Mean	Fertiliser None	Fertiliser N1P1K1
		2ND HARVEST		
		(±0.954)	(±1.350)	
10	D1	18.16	18.75	17.56
20	D2	20.39	20.31	20.47
10	C1	19.60	19.81	19.40
20	C2	20.14	18.69	21.60
		(±0.675)	(±0.954)	
	D1+C1	18.88	19.28	18.48
	D2+C2	20.27	19.50	21.04
Mean		19.57	19.39	19.76
			(±0.675)	

NPK	
111	16.45
211	18.35
112	21.35
212	17.65
Mean	18.45

* Last applied to early potatoes in 1962.

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64/B/5.8

CARROTS. GRADED PRODUCE. ROOTS

Dung	Organic manure applied 1942-62*	Mean	Fertiliser None	Fertiliser N1P1K1
		MEAN OF 2 HARVESTS		
		(±0.616)	(±0.871)	
10	D1	13.56	14.30	12.83
20	D2	14.69	13.96	15.42
10	C1	13.88	14.01	13.75
20	C2	14.69	13.47	15.91
		(±0.436)	(±0.616)	
	D1+C1	13.72	14.16	13.29
	D2+C2	14.69	13.72	15.66
Mean		14.20	13.94 (±0.436)	14.48

NPK	
111	12.72
211	13.35
112	14.94
212	12.72
Mean	13.43

* Last applied to early potatoes in 1962.

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64/B/5.9

CARROTS. TOPS

Dung	Organic manure applied 1942-62*	Mean	Fertiliser None	Fertiliser N1P1K1
		1ST HARVEST		
		(±0.854)	(±1.208)	
10	D1	8.82	9.85	7.78
20	D2	12.04	9.29	14.80
10	C1	9.07	7.18	10.96
20	C2	11.46	9.08	13.84
		(±0.604)	(±0.854)	
	D1+C1	8.94	8.52	9.37
	D2+C2	11.75	9.18	14.32
Mean		10.35	8.85 (±0.604)	11.84

NPK	
111	7.02
211	8.00
112	6.46
212	10.00
Mean	7.87

* Last applied to early potatoes in 1962.

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64/B/5.10

CARROTS. TOPS

Dung	Organic manure applied 1942-62*	Mean	Fertiliser None	Fertiliser N1P1K1
		2ND HARVEST		
		(±0.691)	(±0.977)	
10	D1	10.92	11.23	10.61
20	D2	14.88	13.55	16.22
10	C1	11.21	9.91	12.51
20	C2	13.45	12.06	14.84
		(±0.489)	(±0.691)	
	D1+C1	11.06	10.57	11.56
	D2+C2	14.16	12.80	15.53
Mean		12.62	11.69	13.54
			(±0.489)	

NPK	
111	8.23
211	8.52
112	9.15
212	11.36
Mean	9.32

* Last applied to early potatoes in 1962.

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64/B/5.11

CARROTS. TOPS

Dung	Organic manure applied 1942-62*	Mean	Fertiliser None	Fertiliser N1P1K1
		MEAN OF 2 HARVESTS		
		(±0.588)	(±0.832)	
10	D1	9.87	10.54	9.20
20	D2	13.46	11.42	15.51
10	C1	10.14	8.54	11.73
20	C2	12.46	10.57	14.34
		(±0.416)	(±0.588)	
	D1+C1	10.00	9.54	10.46
	D2+C2	12.96	11.00	14.92
Mean		11.48	10.27 (±0.416)	12.70

NPK	
111	7.62
211	8.26
112	7.80
212	10.68
Mean	8.59

* Last applied to early potatoes in 1962.

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64/B/5.12

GLOBE BEET. SALEABLE BULBS

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		1ST HARVEST		
		(±0.336)	(±0.474)	
10	D1	4.20	1.62	6.78
20	D2	6.23	5.72	6.75
10	C1	4.83	2.88	6.78
20	C2	6.69	6.65	6.72
		(±0.237)	(±0.336)	
	D1+C1	4.52	2.24	6.78
	D2+C2	6.46	6.18	6.74
Mean		5.49	4.22	6.76
			(±0.237)	

NPK	
111	4.07
211	4.17
112	4.07
212	4.07
Mean	4.10

* Last applied to Leeks 1961/62.

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64/B/5.13

GLOBE BEET. SALEABLE BULBS

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		2ND HARVEST		
		(±1.052)	(±1.487)	
10	D1	8.58	5.23	11.92
20	D2	11.69	11.21	12.18
10	C1	9.06	6.46	11.66
20	C2	11.92	9.79	14.05
		(±0.744)	(±1.052)	
	D1+C1	8.82	5.85	11.79
	D2+C2	11.81	10.50	13.12
Mean		10.31	8.17 (±0.744)	12.45

NPK	
111	8.88
211	8.79
112	6.23
212.	7.56
Mean	7.86

*Last applied to Leeks 1961/62.

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64/B/5.14

GLOBE BEET. SALEABLE BULBS

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		MEAN OF 2 HARVESTS		
		(±0.640)	(±0.905)	
10	D1	6.39	3.42	9.35
20	D2	8.96	8.46	9.46
10	C1	6.95	4.67	9.22
20	C2	9.30	8.22	10.38
		(±0.453)	(±0.640)	
	D1+C1	6.67	4.05	9.29
	D2+C2	9.13	8.34	9.92
Mean		7.90	6.19	9.60
			(±0.453)	

NPK	
111	6.48
211	6.48
112	5.15
212	5.82
Mean	5.98

* Last applied to Leeks 1961/62.

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64/B/5.15

GLOBE BEET. TOTAL PRODUCE

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		1ST HARVEST		
		(±0.518)	(±0.733)	
10	D1	9.22	5.10	13.34
20	D2	13.00	12.08	13.92
10	C1	10.45	7.14	13.76
20	C2	13.65	13.66	13.63
		(±0.366)	(±0.518)	
	D1+C1	9.84	6.12	13.55
	D2+C2	13.32	12.87	13.78
Mean		11.58	9.50	13.66
			(±0.366)	

NPK	
111	8.72
211	9.21
112	9.63
212	9.27
Mean	9.21

*Last applied to Leeks 1961/62.

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64/B/5.16

GLOBE BEET. TOTAL PRODUCE

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		2ND HARVEST		
		(±1.397)	(±1.976)	
10	D1	12.99	9.08	16.89
20	D2	17.67	17.18	18.15
10	C1	13.99	10.85	17.12
20	C2	17.78	14.89	20.67
		(±0.988)	(±1.397)	
	D1+C1	13.49	9.96	17.01
	D2+C2	17.72	16.04	19.42
Mean		15.61	13.00	18.21
			(±0.988)	

NPK	
111	13.24
211	13.41
112	10.82
212	11.86
Mean	12.33

* Last applied to Leeks 1961/62.

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64/B/5.17

GLOBE BEET. TOTAL PRODUCE

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		MEAN OF 2 HARVESTS		
		(±0.897)	(±1.269)	
10	D1	11.10	7.09	15.12
20	D2	15.34	14.63	16.04
10	C1	12.22	9.00	15.44
20	C2	15.72	14.28	17.15
		(±0.634)	(±0.897)	
	D1+C1	11.66	8.04	15.28
	D2+C2	15.53	14.46	16.60
Mean		13.60	11.25	15.94
			(±0.634)	

NPK	
111	10.98
211	11.31
112	10.22
212	10.56
Mean	10.77

* Last applied to Leeks 1961/62.

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64/B/5.18

GLOBE BEET. PLANT NUMBER

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		1ST HARVEST		
10	D1	123.6	110.3	136.9
20	D2	154.8	159.2	150.5
10	C1	132.6	140.1	125.0
20	C2	143.1	143.8	142.4
	D1+C1	128.1	125.2	131.0
	D2+C2	149.0	151.5	146.4
Mean		138.5	138.4	138.7

NPK	
111	118.4
211	120.1
112	173.4
212	123.3
Mean	133.8

* Last applied to Leeks 1961/62.

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64/B/5.19

GLOBE BEET. PLANT NUMBER

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		2ND HARVEST		
10	D1	139.5	142.1	136.9
20	D2	166.6	177.4	155.7
10	C1	159.0	172.2	145.9
20	C2	149.6	149.6	149.6
	D1+C1	149.3	157.2	141.4
	D2+C2	158.1	163.5	152.6
Mean		153.7	160.3	147.0

NPK	
111	130.0
211	124.7
112	178.0
212	147.0
Mean	144.9

* Last applied to Leeks 1961/62.

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64/B/5.20

GLOBE BEET. PLANT NUMBER

Dung	Organic manure applied 1942-61*	Mean	Fertiliser None	Fertiliser N1P1K1
		MEAN OF 2 HARVESTS		
10	D1	131.6	126.2	136.9
20	D2	160.7	168.3	153.1
10	C1	145.8	156.2	135.5
20	C2	146.4	146.7	146.0
	D1+C1	138.7	141.2	136.2
	D2+C2	153.6	157.5	149.6
Mean		146.1	149.4	142.9

NPK	
111	124.2
211	122.4
112	175.7
212	135.2
Mean	139.4

* Last applied to Leeks 1961/62.

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64/B/6.1

IRRIGATION EXPERIMENT

(WIR)

Revised 1963

The effects of irrigation and nitrogen - Woburn Butt Close 1964, the 14th year.

For details of previous cropping, treatments etc., see 'Details' 1962.

Sugar beet: The test of early v normal singling was omitted.
Barley: The variety is now Maris Badger.
Clover: The variety is now Dorset Marl double cut red clover.
Lucerne: Plots 73 - 80 failed and were rotary cultivated in mid-season. In view of the incomplete replication remaining no yields are presented.

Area harvested: Sugar beet, sub plot - 0.0102, barley, whole plot - 0.0097, clover, whole plot - 0.0058, lucerne, sub plot - 0.0162.

RAINFALL AND IRRIGATION: INCHES

Week ending	Rain-fall	Barley	Sugar beet			Clover			Lucerne		
		C	A	B	C	A	B	C	A	B	C
May 4	0.77										
11	0.09										
18	0.12	0.50				0.50		0.50			
25	0.44					0.50		0.50	0.50		0.50
June 1	0.25	0.50	0.50		0.50						
8	1.51										
15	0.66										
22	1.28										
29	-										
July 6	-	0.50	0.50		0.50		0.50	0.50		0.50	0.50
13	0.55	0.50	0.50		0.50		0.50	0.50		0.50	0.50
20	0.33				0.50		0.50	0.50			
27	0.09										0.50
Aug 3	0.01			1.50	0.50						
10	0.50										
17	0.12						0.50	0.50			
24	0.16			0.50	1.00		0.50	0.50			1.00
31	0.03						0.50	0.50			
Sept 7	0.10										
14	0.01										
21	0.37										
28	0.62										
Oct 5	-										
Total	8.01	2.00	1.50	2.00	3.50	1.00	3.00	4.00	0.50	1.00	3.00

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Cultivations, etc.:

Sugar beet. Subsoiled: Sept 11, 1963. Ploughed twice: Aug 20 and Jan 2, 1964. Salt applied: Feb 4. Basal compound and sulphate of ammonia applied: Apr 7. Seed drilled at 5lb: Apr 10. Singled, sprayed with DDT at 0.63 lb in 40 gals: May 21. Lifted: Oct 13.

Barley: Ground chalk applied at 44 cwt: Dec 20, 1963. Ploughed: Jan 3, 1964. Basal compound and 'Nitro-Chalk' applied, seed drilled at 2.5 bushels: Feb 14. Clover sown at 30 lb: Apr 27. Sprayed with MCPB/MCPA (New Legumex at 5 pints in 40 gals): May 21. Combine harvested: Aug 21.

Clover: Seed undersown in barley at 30 lb: Apr 18, 1963. Basal compound fertiliser applied: Feb 5, 1964. Cut 3 times: June 11, July 27, Sept 29.

Lucerne: Sprayed with paraquat at 1.6 lb ion in 40 gals: Feb 10, 1964. 'Nitro-Chalk', muriate of potash and basal P applied: Apr 3. Plots 73 - 80 cut (no yields taken) and rotary cultivated twice: May 15 and 27. Cut 4 times: June 9, July 16, Sept 2, Oct 30. Muriate of potash applied after first 3 cuts.

Standard errors per plot.

Sugar beet.	Roots,	Whole plot:	1.421 or 8.6% (6 d.f.)
		Sub plot:	1.592 or 9.7% (8 d.f.)
	Total sugar,	Whole plot:	6.33 or 9.8% (6 d.f.)
		Sub plot:	6.39 or 9.9% (8 d.f.)
	Tops,	Whole plot:	1.738 or 19.4% (6 d.f.)
		Sub plot:	1.364 or 15.3% (8 d.f.)
Barley.	Grain,	Whole plot:	5.15 or 15.3% (5 d.f.)
		Sub plot:	2.57 or 7.6% (10 d.f.)
Clover. Dry matter,			
1st cut.		Whole plot:	2.24 or 7.5% (6 d.f.)
		Sub plot:	2.71 or 9.0% (8 d.f.)
2nd cut.		Whole plot:	2.51 or 11.5% (6 d.f.)
		Sub plot:	2.50 or 11.4% (8 d.f.)
3rd cut.		Whole plot:	0.86 or 12.0% (6 d.f.)
		Sub plot:	0.55 or 7.7% (8 d.f.)
Total of 3 cuts.		Whole plot:	4.29 or 7.3% (6 d.f.)
		Sub plot:	4.81 or 8.1% (8 d.f.)

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64/B/6.3

SUMMARY OF RESULTS

SUGAR BEET

	O	A	B	C	Mean
		ROOTS			
		(1) and (2)			(±0.460)
N1	13.41	13.34	17.48	16.60	15.20
N2	13.75	16.77	19.91	20.17	17.65
Mean (±0.820)	13.58	15.05	18.69	18.39	16.43
		SUGAR %			
N1	20.1	20.1	19.6	19.9	19.9
N2	18.6	19.3	19.3	19.6	19.2
Mean	19.4	19.7	19.5	19.8	19.6

(1) (±0.919) For use in vertical and interaction comparisons only
(2) (±1.047) For use in horizontal and diagonal comparisons only

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64/B/6.4

SUGAR BEET

	O	A	B	C	Mean
TOTAL SUGAR					
		(1) and (2)			(±1.84)
N1	54.0	53.5	68.5	66.1	60.5
N2	51.5	64.7	76.9	79.4	68.1
Mean (±3.66)	52.8	59.1	72.7	72.7	64.3
TOPS					
		(1) and (2)			(±0.394)
N1	5.91	7.09	8.05	7.87	7.23
N2	7.22	9.54	11.94	13.91	10.65
Mean (±1.004)	6.56	8.31	10.00	10.89	8.94

	Total sugar	Tops	
(1)	(±3.69)	(±0.787)	For use in vertical and interaction comparisons only
(2)	(±4.49)	(±1.148)	For use in horizontal and diagonal comparisons only

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64/B/6.5

BARLEY

GRAIN

	O	C	Mean
	(1) and (2)		(±0.74)
N1	28.8	31.0	29.9
N2	37.4	37.6	37.5
Mean (±2.10)	33.1	34.3	33.7

(1) (±1.05) For use in vertical and interaction comparisons only
(2) (±2.23) For use in horizontal and diagonal comparisons only

Mean D.M.%: 83.5

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64/B/6.6

CLOVER

DRY MATTER

	O	A	B	C	Mean
		1ST CUT*			
		(1) and (2)			(±0.78)
N1	29.8	30.9	28.6	33.2	30.6
N2	27.3	28.0	27.0	34.9	29.3
Mean (±1.29)	28.5	29.5	27.8	34.0	30.0

Mean D.M. %: 17.1

		2ND CUT			
		(1) and (2)			(±0.72)
N1	17.1	17.5	28.7	23.6	21.7
N2	18.6	15.1	29.0	25.4	22.0
Mean (±1.45)	17.8	16.3	28.9	24.5	21.9

Mean D.M. %: 18.6

	1ST CUT	2ND CUT	
(1)	(±1.57)	(±1.44)	For use in vertical and interaction comparisons only
(2)	(±1.70)	(±1.77)	For use in horizontal and diagonal comparisons only

*NOTE: 1st cut O = B
A = C

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64/B/6.7

CLOVER

DRY MATTER

	0	A	B	C	Mean
		3RD CUT			
		(1) and (2)			(±0.16)
N1	2.2	3.2	11.9	11.7	7.2
N2	2.4	4.6	10.3	11.6	7.2
Mean (±0.50)	2.3	3.9	11.1	11.6	7.2

Mean D.M. %: 24.1

TOTAL OF 3 CUTS

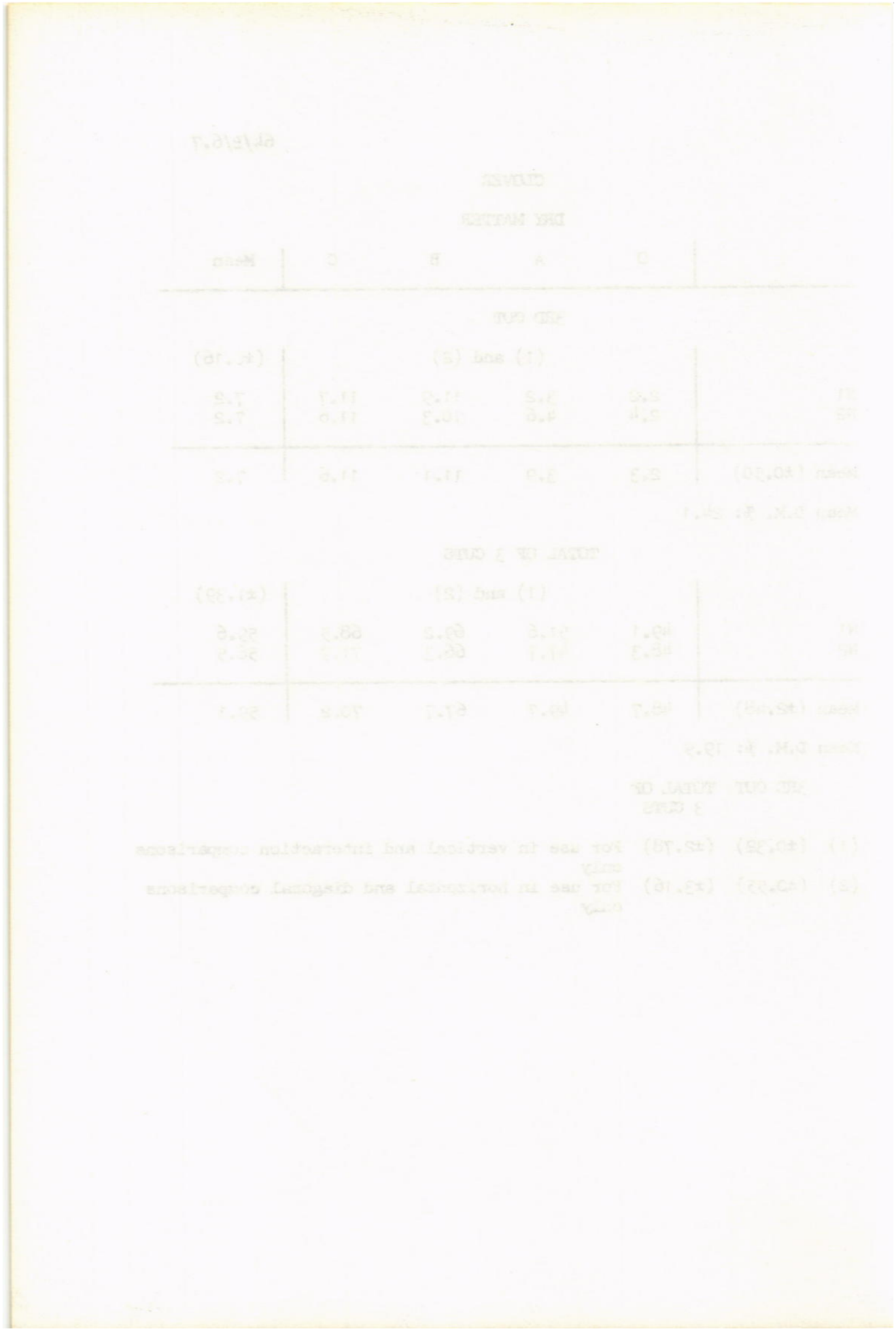
		(1) and (2)			(±1.39)
N1	49.1	51.6	69.2	68.5	59.6
N2	48.3	47.7	66.3	71.9	58.5
Mean (±2.48)	48.7	49.7	67.7	70.2	59.1

Mean D.M. %: 19.9

	3RD CUT	TOTAL OF 3 CUTS	
(1)	(±0.32)	(±2.78)	For use in vertical and interaction comparisons only
(2)	(±0.55)	(±3.16)	For use in horizontal and diagonal comparisons only

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64/B/7.1

RESIDUAL PHOSPHATE ROTATION

(RP)

The long term and residual effects of a number of phosphate fertilisers compared with superphosphate - Great Field IV and Sawyers I 1964, the fifth year.

For treatments and rotation, etc. see 'Results', 63/B/8 and for previous years' results see 60/B/9, 61/B/8, 62/B/8 and 63/B/8.

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.

Cultivations, etc. (both fields, except as indicated): Ploughed:
Great Field IV - Dec 9,1963. Sawyers I - Jan 3, 1964.
Potatoes: Ground chalk applied to Great Field IV at 23 cwt: Dec 9, 1963. Fertilisers applied, potatoes planted: May 4, 1964. Sprayed with diquat/paraquat (Preeglone Extra at 2 pints in 40 gals): May 19. Earthed up: June 22. Sprayed twice with mancozeb at 1.2 lb in 35 gals: July 1 and Aug 6. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 17. Lifted: Sept 23.
Barley: Ground chalk applied at 23 cwt: Dec 9, 1963. Fertilisers applied, seed drilled at 2 bushels: Feb 13, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 15. Combine harvested: Aug 20.
Swedes: Ground chalk applied at 23 cwt: Dec 9, 1963. Fertilisers applied: May 19, 1964. Seed drilled at 2 lb: May 21. Singled: July 2. Lifted: Oct 13.

Standard errors per plot.
Sawyers I.
Potatoes, Total tubers: 0.465 or 5.4% (11 d.f.)
Barley, Grain: 1.97 or 4.4% (11 d.f.)
Swedes, Roots: 1.356 or 15.1% (11 d.f.)

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64/B/7.2

SUMMARY OF RESULTS

POTATOES

Treatment	TOTAL TUBERS: Great Mean	Great Field IV Increase	Sawyers I Mean	Sawyers I Increase	PERCENTAGE WARE Great Mean	Great Field IV Increase	Sawyers I Mean	Sawyers I Increase
			(±0.329)	(±0.465)				
1	8.46		8.66		96.7		97.0	
2	9.54	+1.08	9.05	+0.39	94.7	-2.0	95.0	-2.0
3	10.44	+1.98	9.53	+0.87	95.6	-1.1	95.1	-1.9
4	9.34	+0.88	8.41	-0.25	97.1	+0.4	96.9	-0.1
5	7.93	-0.53	8.60	-0.06	93.8	-2.9	94.9	-2.1
6	8.84	+0.38	8.91	+0.25	95.5	-1.2	95.7	-1.3
7	9.75	+1.29	8.57	-0.09	96.9	+0.2	95.8	-1.2
8	8.51	+0.05	8.35	-0.31	95.3	-1.4	95.6	-1.4
9	9.02	+0.56	7.68	-0.98	95.8	-0.9	95.5	-1.5
10	8.25	-0.21	8.45	-0.21	96.5	-0.2	95.0	-2.0
11	8.70	+0.24	8.72	+0.06	97.7	+1.0	95.7	-1.3
12	9.74	+1.28	8.58	-0.08	96.4	-0.3	95.0	-2.0
Mean	9.04		8.63		96.0		95.6	

BARLEY

	GRAIN				STRAW			
			(±1.39)	(±1.97)				
1	40.4		41.7		24.3		26.3	
2	37.2	-3.2	46.2	+4.5	27.0	+2.7	25.6	-0.7
3	36.6	-3.8	42.9	+1.2	24.4	+0.1	24.3	-2.0
4	37.7	-2.7	43.8	+2.1	27.3	+3.0	25.5	-0.8
5	33.2	-7.2	43.9	+2.2	25.1	+0.8	24.9	-1.4
6	37.8	-2.6	46.3	+4.6	25.5	+1.2	26.6	+0.3
7	38.6	-1.8	44.2	+2.5	28.1	+3.8	26.2	-0.1
8	37.6	-2.8	46.5	+4.8	25.8	+1.5	26.4	+0.1
9	40.9	+0.5	45.3	+3.6	25.9	+1.6	25.5	-0.8
10	40.1	-0.3	44.0	+2.3	27.3	+3.0	23.4	-2.9
11	38.0	-2.4	45.9	+4.2	25.3	+1.0	27.1	+0.8
12	35.0	-5.4	46.6	+4.9	29.8	+5.5	27.5	+1.2
Mean	37.8		44.8		26.3		25.8	

Mean D.M.%: 82.2 81.4 87.8 89.3

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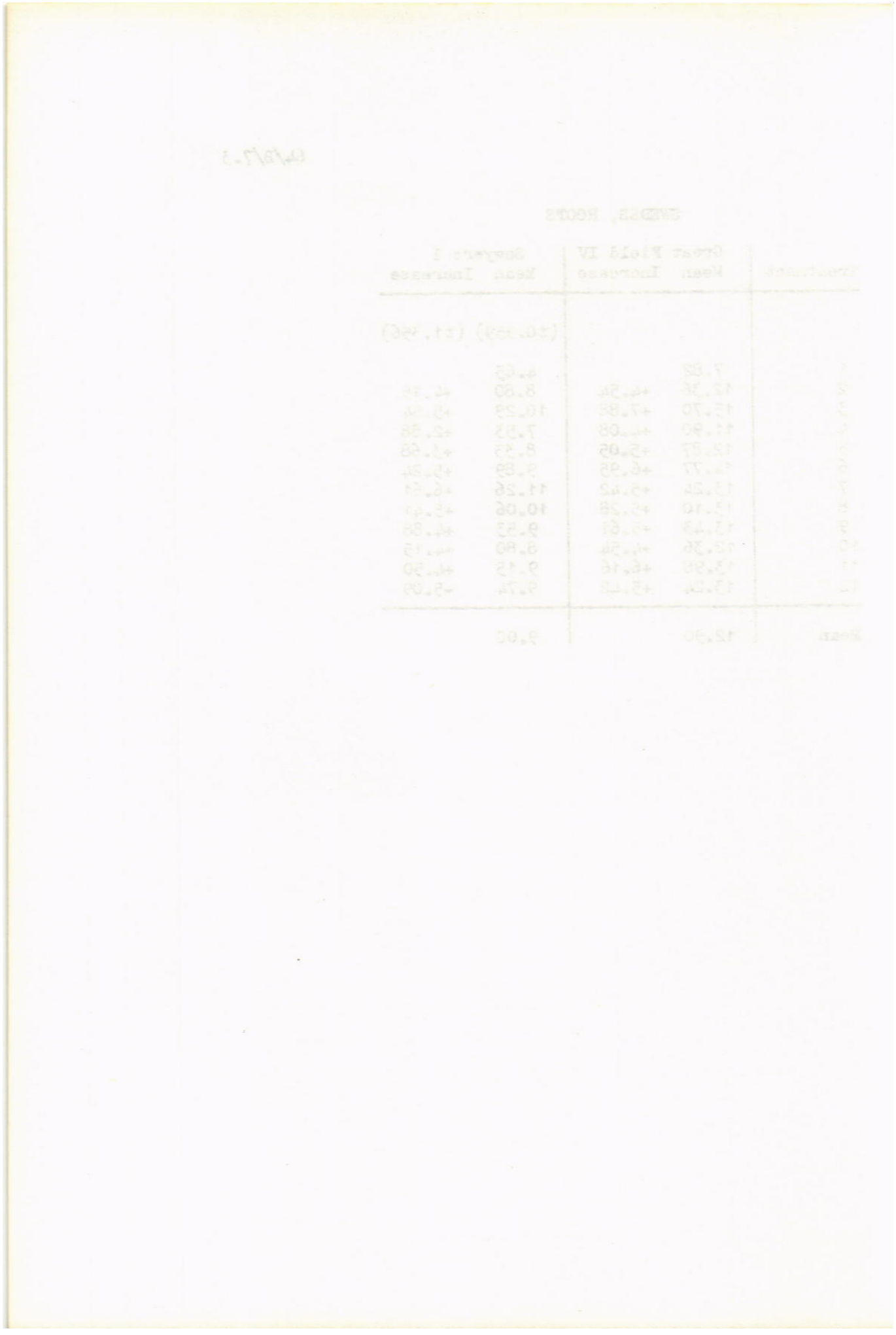
64/B/7.3

SWEDES, ROOTS

Treatment	Great Field IV Mean	Great Field IV Increase	Sawyers I Mean	Sawyers I Increase
			(±0.959)	(±1.356)
1	7.82		4.65	
2	12.36	+4.54	8.80	+4.15
3	15.70	+7.88	10.29	+5.64
4	11.90	+4.08	7.53	+2.88
5	12.87	+5.05	8.33	+3.68
6	14.77	+6.95	9.89	+5.24
7	13.24	+5.42	11.26	+6.61
8	13.10	+5.28	10.06	+5.41
9	13.43	+5.61	9.53	+4.88
10	12.36	+4.54	8.80	+4.15
11	13.98	+6.16	9.15	+4.50
12	13.24	+5.42	9.74	+5.09
Mean	12.90		9.00	

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64/B/8.1

N LEVELS AND RESIDUES ROTATION

(NL)

Direct and residual effects of sulphate of ammonia - Long Hoos III, 1964, the fifth and final year.

Rotation: Wheat, potatoes. In 1964, winter wheat only, following potatoes.

Design: 3 x 3 x 3 in 3 blocks of 9 plots each.

Area of each plot: 0.0212. Area harvested: 0.0141.

Treatments: All combinations of:-

N 1964.	None (N0), 0.5 (N1), 1.0 (N2) cwt N.
N to potatoes 1963.	None (NP0), 0.75 (NP1), 1.50 (NP2) cwt N.
N to wheat 1960 & 1962.	None (NW0), 0.5 (NW1), 1.0 (NW2) cwt N.

The nitrogen was applied as sulphate of ammonia. Ground chalk was applied in October 1962 at 1 cwt per cwt of sulphate of ammonia applied in 1960, 1961 and 1962.

Basal dressing: 2.25 cwt 0:14:28 combined drilled.

Cultivations, etc.: Chisel ploughed: Oct 14, 1963. Seed drilled at 3 bushels: Oct 19. Sulphate of ammonia applied, plots sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 27, 1964. Combine harvested: Aug 25. Variety: Cappelle.

NOTES: (1) For details of the previous years' results see 'Results' 60/B/10, 61/B/9, 62/B/9 and 63/B/9.
(2) If the N levels to potatoes 1961 are included, the design becomes a 1/3 replicate, but no account of this factor has been taken in the analysis.

Standard error per plot. Winter wheat:
Grain: 2.79 or 10.4% (15 d.f.)

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64/B/8.2

SUMMARY OF RESULTS

GRAIN

		NP 0	NP 1	NP 2	NW 0	NW 1	NW 2	Mean
			(±1.61)			(±1.61)		(±0.93)
N	0	19.0	20.3	25.5	20.9	21.0	22.9	21.6
	1	24.5	26.1	25.6	25.7	22.9	27.7	25.4
	2	29.8	35.3	35.6	35.0	32.3	33.4	33.6
NP	0				24.7	23.4	25.2	24.4
	1				25.6	26.8	29.2	27.2
	2				31.2	26.0	29.4	28.9
Mean (±0.93)					27.2	25.4	28.0	26.8

Mean D.M. %: 82.4

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64/B/9.1

CULTIVATION - WEEDKILLER ROTATION

(CW)

Gt. Harpenden I 1964 - the 4th year

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

For previous history, rotation, treatments etc., see 'Results' 61/B/10, 62/B/10 and 63/B/10.

Area harvested: Spring beans - 0.0110. Winter wheat, potatoes, barley - 0.0107.

Treatments. One plot per block of the 'Reserve' plots was allocated to a new treatment ('A'). For spring-sown crops: no cultivation in autumn or winter, rotary cultivated before sowing. For autumn sown crops: as treatment P. These plots are sprayed as 'X'.

From 1964 it was decided that on all sprayed plots beans would be drilled in rows 10.5 inches apart, on other plots the spacing would be 21 inches as hitherto. In 1964, however, the reserve plots were drilled at 10.5 inches in error, and were sprayed as treatment 'X'.

Weedkillers used on potatoes 1964:-
Prometryne (2 lb) and paraquat (0.75 lb ion) in 40 gals (X).
Linuron (2 lb) and paraquat (0.75 lb ion) in 40 gals (Y).
The earthing up treatment to potatoes is discontinued.
Barley variety 1964 Maris Badger.

Basal dressings: Winter wheat: 2.5 cwt 6:15:15 and 3 cwt 'Nitro-Chalk' in spring. Barley: 2.5 cwt 20:10:10. Potatoes and beans, as 1961.

Operations in 1964

NOTE: Spring beans were sown instead of winter beans.

Cultivations, etc.:
Spring beans: Sprayed with dalapon at 11 lb a.e. in 40 gals: Nov 16, 1963. T plots rigid-tine cultivated twice, P and reserve plots ploughed: Jan 3, 1964. R plots rotary cultivated: Jan 8. P,T and reserve plots spring-tine cultivated: Mar 9. R and A plots rotary cultivated, P, T and reserve plots spring-tine cultivated: Apr 1. Seed drilled at 200 lb: Apr 2. All plots sprayed with simazine: Apr 9. M plots tractor hoed: May 11. M plots chain-harrowed: May 12. Combine harvested: Sept 2.

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Winter wheat: T plots rigid-tine cultivated twice: Nov 21, 1963. P, A and reserve plots ploughed: Nov 27. P,T,A and reserve plots spring-tine cultivated twice, R plots rotary cultivated, seed drilled at 3 bushels: Dec 12. 'Nitro-Chalk' applied: Apr 13, 1964. H sub-plots and reserve plots sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): May 7. Combine harvested: Aug 26.

Potatoes: Sprayed with dalapon at 11 lb a.e. in 40 gals: Nov 16, 1963. T plots rigid-tine cultivated twice: Jan 3, 1964. P and reserve plots ploughed: Jan 6. R plots rotary cultivated: Jan 8. Basal compound fertiliser applied, T,P and reserve plots spring-tine cultivated, A and R plots rotary cultivated: Apr 13. Plot 59 (TM) harrowed and couch grass carted off, P,T and reserve plots spring-tine cultivated, A and R plots rotary cultivated second time, seed machine planted: Apr 14. Ridges rolled: May 5. M plots grubbed and chain harrowed, X and Y plots sprayed: May 12. M plots grubbed: June 11. M plots earthed up: June 12. Sprayed twice with mancozeb at 1.2 lb in 35 gals: July 1 and Aug 7. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 5. Lifted: Sept 14.

Barley: Sprayed with sodium trichloracetate at 18 lb in 40 gals: Nov 21, 1963. All plots spring-tine cultivated: Dec 7. Sprayed second time with sodium trichloracetate at 18 lb in 40 gals: Dec 18. All plots spring-tine cultivated: Jan 6, 1964. T plots rigid-tine cultivated twice, P and reserve plots ploughed, R plots rotary cultivated: Jan 14. All plots except R and A plots spring-tine cultivated: Mar 9. R and A plots rotary cultivated, P, T and reserve plots harrowed: Mar 10. Seed drilled at 2.75 bushels: Mar 11. Rolled: Mar 12. H sub-plots and reserve plots sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 14. Combine harvested: Aug 12.

Standard errors per plot.

Spring beans, grain:	Whole plot:	2.16 or 7.9% (11 d.f.)
Winter wheat, grain:	Whole plot:	3.73 or 8.4% (8 d.f.)
	Sub plot:	2.16 or 4.9% (9 d.f.)
Potatoes, total tubers:	Whole plot:	1.084 or 10.6% (8 d.f.)
Barley, grain:	Whole plot:	1.24 or 2.5% (11 d.f.)
	Sub plot:	2.48 or 4.9% (12 d.f.)

NOTE: Potatoes. On plot 59(TM) there was a heavy infestation of twitch (Agropyron repens) and a very heavy infestation of chickweed (Stellania media).

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64/B/9.3

SUMMARY OF RESULTS

	P	R	T	Mean
SPRING BEANS				
GRAIN				
Mean (±0.88)	27.9	26.6	27.4	27.3
M (±1.53)	29.7	28.9	29.1	29.2 (±0.88)
X (±1.08)	27.0	25.5	26.6	26.4 (±0.62)
	A X 27.8	Reserve X 28.0		

General mean: 27.5

Mean D.M.%: 86.6

WINTER WHEAT				
GRAIN				
Mean (±1.52)	44.8	45.1	43.0	44.3
1963		(±2.64)		(±1.52)
M	44.6	45.0	43.5	44.3
X	43.1	43.9	42.7	43.2
Y	46.8	46.4	43.0	45.4
1964		(1) and (2)		(±0.51)
-	46.4	45.0	43.2	44.8
H	43.2	45.2	42.9	43.8
	A - 46.5	A H 42.3	Reserve H 41.2	

General mean: 43.8
Mean D.M.%: 87.3

(1) (±0.88) For use in vertical and interaction comparisons
(2) (±1.65) For use in horizontal and diagonal comparisons

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POTATOES

	P	R	T	Mean
TOTAL TUBERS				
Mean (±0.442)	10.77	9.84	10.09	10.23
		(±0.766)		(±0.442)
M	10.60	9.11	7.73	9.15
X	10.61	10.35	10.30	10.42
Y	11.09	10.08	12.23	11.13
	A X 9.68	Reserve 11.12		

General mean: 10.34

% WARE				
Mean	90.8	88.9	89.8	89.8
M	89.8	87.9	86.5	88.0
X	91.0	89.7	90.3	90.3
Y	91.7	89.2	92.7	91.2
	A X 84.9	Reserve 92.0		

General mean: 89.8

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64/B/9.5

BARLEY

GRAIN

	P	R	T	Mean
Mean (±0.51)	51.2	49.8	49.7	50.2
1963				
M (±0.88)	50.6	50.8	48.1	49.8 (±0.51)
X (±0.62)	51.5	49.3	50.5	50.4 (±0.36)
1964		(1) and (2)		(±0.58)
-	50.8	49.3	46.8	49.0
H	51.6	50.3	52.7	51.5
	A	A	Reserve	
	-	H	H	
	49.9	48.8	51.1	

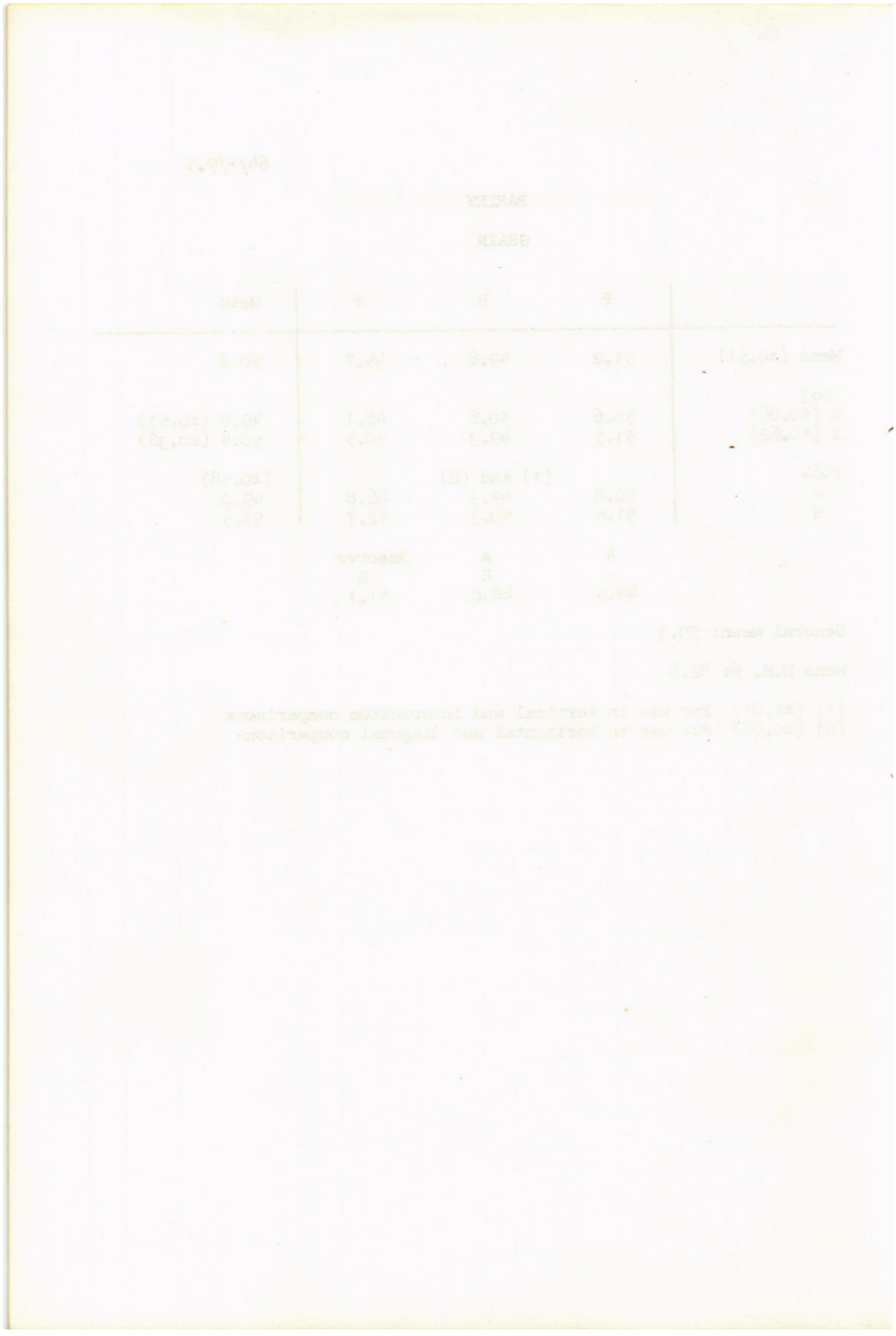
General mean: 50.3

Mean D.M. %: 82.6

(1) (±1.01) For use in vertical and interaction comparisons
(2) (±0.88) For use in horizontal and diagonal comparisons

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64/B/10.1

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 1964, the fifth year.

For history, rotation etc., see 'Results' 60/B/11, 61/B/11, 62/B/11 and 63/B/11.
Because of potato cyst nematode sugar beet replaces potatoes.

Area of each plot: 0.0482. Area harvested: Sugar beet - roots - 0.0121, tops - 0.0040, barley - 0.0115.

Treatments:
Sugar beet: Ploughed (P), rotary cultivated (R), rigid-tine cultivated (T). Normal mechanical cultivations after sowing. (Three plots per block for each treatment). No weedkiller applied.
Barley: P, R and T as for sugar beet.

Basal dressing. Sugar beet: 5 cwt agricultural salt, 6 cwt 20:10:10.
Barley: 3.5 cwt 16:9:9 combine drilled.

Cultivations, etc.:
Both crops: T plots rigid-tine cultivated twice, P plots ploughed, R plots rotary cultivated: Dec 2, 1963.
Sugar beet: Salt applied: Feb 4, 1964. T and P plots spring-tine cultivated: Feb 25. Basal NPK compound applied: Apr 6. T and P plots spring-tine cultivated: Apr 9. R plots rotary cultivated second time, all plots harrowed: Apr 10. Seed drilled at 5 lb: Apr 11. Singled: May 28. Lifted: Oct 14. Variety: Klein E.
Barley: All plots harrowed: Feb 14, 1964. Seed drilled at 2.5 bushels: Feb 15. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 12. Combine harvested: Aug 26. Variety: Maris Badger.

Standard errors per plot.

Sugar beet.	Roots (washed):	0.978	or 7.9% (14 d.f.)
	Total sugar:	4.39	or 8.2% (14 d.f.)
	Tops:	0.750	or 12.2% (14 d.f.)
Barley.	Grain:	4.16	or 26.0% (14 d.f.)

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64/B/10.2

SUMMARY OF RESULTS

P	R	T	Mean
	SUGAR BEET		
	ROOTS		
	(±0.399)		
12.27	12.46	12.20	12.31
	SUGAR %		
21.7	22.1	21.7	21.8
	TOTAL SUGAR		
	(±1.79)		
53.2	55.1	53.0	53.7
	TOPS		
	(±0.306)		
6.33	6.19	5.93	6.15
	BARLEY		
	GRAIN		
	(±1.70)		
16.4	14.7	16.9	16.0

Mean D.M. %: 87.6

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64/B/11.1

GRAZED REFERENCE PLOTS

(RG)

The effects of fertilisers on old grass, grazed and occasionally hayed - Highfield IX, 1959 - 1964.

Design: 4 randomised blocks of 14 plots each.

Area of each plot: 0.0079. Area harvested: 0.0002.

Treatments: All combinations of:-

1. Nitrogen*: None (N0), 1.5 cwt N as calcium nitrate (N1), 1.5 cwt N as sulphate of ammonia (A1).
2. Phosphate*: None (P0), 1.0 cwt P_2O_5 (P1), as granular superphosphate (G) (Blocks I and III) and as triple superphosphate (T) (Blocks II and IV).
3. Potash*: None (K0), 2.0 cwt K_2O (K1) as muriate of potash.

In addition 2 plots per block were manured as follows:- N2P1K1 and A2P1K1 where N2 and A2 are 3 cwt N as calcium nitrate and sulphate of ammonia respectively.

Plots receiving sulphate of ammonia received also 7.5 (A1 plots) and 15 cwt (A2 plots) calcium carbonate in 1964.

* The rates have varied as follows:-

1959 and 1960: 1.0 (A1 and N1), 2.0 (A2 and N2) cwt N, 0.5 cwt P_2O_5 (P1), 1.0 cwt K_2O (K1).

1961: 4 cwt P_2O_5 (P1), 3.0 cwt K_2O (K1).

Basal dressing: None.

Cultivations, etc.:

1964: Ground chalk applied to appropriate plots: Nov 28, 1963. P and K fertilisers applied: Dec 10. First N dressings applied: Mar 20, 1964. Sample cuts taken 4 times: May 13, June 29, Sept 1, Oct 27. N dressings applied after first 3 cuts. From the beginning of the experiment the field was grazed extensively, with some quite short intervals, by sheep and cattle. In 1964 cages were placed on all plots to protect the sampling area from grazing. The cages were moved after each cut. The yields are estimated from these samples.

Standard errors per plot. Dry matter:

1st cut:	2.05 cwt or 12.4% (26 d.f.)
2nd cut:	2.93 cwt or 7.0% (26 d.f.)
3rd cut:	5.29 cwt or 15.4% (26 d.f.)
4th cut:	3.86 cwt or 42.5% (26 d.f.)
Total of 4 cuts:	8.15 cwt or 8.0% (26 d.f.)

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64/B/11.2

SUMMARY OF RESULTS

DRY MATTER

	PK	Granular	Triple	Mean
		1ST CUT		
		(±1.45)*		(±1.03)
N0	00	8.0	11.4	9.7
N1	00	15.0	15.0	15.0
A1	00	14.0	15.8	14.9
N0	10	11.7	11.4	11.5
N1	10	19.3	17.7	18.5
A1	10	21.0	21.7	21.4
N0	01	13.4	12.6	13.0
N1	01	17.3	14.6	15.9
A1	01	17.7	19.5	18.6
N0	11	12.7	15.0	13.8
N1	11	22.6	21.2	21.9
A1	11	23.9	20.0	21.9
N2	11	20.8	17.4	19.1
A2	11	21.9	14.4	18.1
Mean		17.1	16.2	16.7
		2ND CUT		
		(±2.07)*		(±1.46)
N0	00	29.6	31.4	30.5
N1	00	37.7	39.9	38.8
A1	00	40.4	40.8	40.6
N0	10	28.0	29.4	28.7
N1	10	42.8	49.2	46.0
A1	10	43.1	46.0	44.5
N0	01	34.3	35.5	34.9
N1	01	41.8	48.7	45.2
A1	01	40.3	48.2	44.2
N0	11	35.4	41.7	38.5
N1	11	48.5	49.2	48.8
A1	11	44.7	45.9	45.3
N2	11	52.0	54.5	53.2
A2	11	48.6	50.6	49.6
Mean		40.5	43.6	42.1

Mean D.M.%: 1st cut: 18.8
2nd cut: 21.1

*For use in vertical and interaction comparisons only.

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64/B/11.3

DRY MATTER

	Granular	Triple	Mean
		3RD CUT	
PK		(±3.74)*	(±2.64)
N0 00	25.5	22.8	24.1
N1 00	32.2	33.8	33.0
A1 00	31.8	34.5	33.1
N0 10	24.6	23.2	23.8
N1 10	36.8	33.2	35.0
A1 10	26.2	35.9	31.0
N0 01	42.7	25.8	34.2
N1 01	34.2	35.7	34.9
A1 01	37.1	31.1	34.1
N0 11	34.4	30.4	32.4
N1 11	36.9	38.4	37.6
A1 11	35.5	42.5	39.0
N2 11	43.0	43.8	43.4
A2 11	44.5	46.7	45.6
Mean	34.7	34.1	34.4
		4TH CUT	
		(±2.73)*	(±1.93)
N0 00	3.9	5.7	4.8
N1 00	10.6	13.1	11.8
A1 00	12.4	11.6	12.0
N0 10	4.4	9.0	6.7
N1 10	9.6	10.4	10.0
A1 10	6.9	15.0	10.9
N0 01	8.1	3.4	5.8
N1 01	9.2	10.7	10.0
A1 01	8.4	9.5	8.9
N0 11	5.0	3.0	4.0
N1 11	10.8	11.5	11.1
A1 11	10.8	14.2	12.5
N2 11	9.0	10.0	9.5
A2 11	11.3	7.9	9.6
Mean	8.6	9.6	9.1

Mean D.M.%: 3rd cut: 31.4
4th cut: 31.4

*For use in vertical and interaction comparisons only.

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64/B/11.4

DRY MATTER

TOTAL OF 4 CUTS

		Granular	Triple	Mean
			(±5.76)*	(±4.08)
	PK			
N0	00	67.0	71.2	69.1
N1	00	95.3	101.8	98.6
A1	00	98.6	102.6	100.6
N0	10	68.6	72.9	70.8
N1	10	108.4	110.4	109.4
A1	10	97.1	118.6	107.8
N0	01	98.4	77.2	87.8
N1	01	102.5	109.6	106.1
A1	01	103.4	108.2	105.8
N0	11	87.4	90.0	88.7
N1	11	118.8	120.2	119.5
A1	11	114.8	122.6	118.8
N2	11	124.7	125.6	125.2
A2	11	126.2	119.6	122.9
Mean		100.8	103.6	102.2

Mean D.M. %: 25.7

*For use in vertical and interaction comparisons only.

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64/C/1.1

EFFECT OF K AND Mg

(LM and WAC)

K and Mg - Rothamsted (R) Sawyers I the sixth year, potatoes 1964 and Woburn (W) Stackyard Series C the fifth year, potatoes and sugar beet 1964.

Design: Sawyers I (R): 8 randomised blocks of 9 plots each.
Stackyard Series C (W): 4 randomised blocks of 9 plots each, 2 blocks per crop.

	Area of each plot:	Area harvested:
Sawyers I (R):	0.0206	0.0137
Stackyard Series C (W):	0.0011	0.0011

Treatments. All combinations of:-

1. Mg: None (Mg 0), 29 (Mg 1), 58 lb (Mg 2) applied as magnesium sulphate on Sawyers I (R) and none (Mg 0), 29 (Mg 1), 58 lb (Mg 2) as kieserite on Stackyard Series C (W).
2. K: Sawyers I (R): (in lb K).

	K0	K1	K2
1962	24	95	165
1963	None	71	142
1964	None	91	182

Stackyard Series C (W): None (K0), 95 (K1), 190 lb (K2), applied in 1962, 1963 and 1964. All K as sulphate of potash.

The K and Mg dressings on Stackyard Series C (W) were applied half in winter half in spring.

In addition in 1959 and 1962 magnesium-free calcium carbonate was applied to blocks on Sawyers I (R) at 38, 76 cwt (CA1, CA2).

Basal dressings:
Sawyers I (R): 0.5 cwt P_2O_5 as triple superphosphate applied on flat before planting.
1.0 cwt N as sulphate of ammonia applied on flat before planting.
Stackyard Series C (W): 1.5 cwt P_2O_5 as triple superphosphate, half dug in in winter, half applied in spring.
1.5 cwt N as ammonium nitrate in seedbed.

Cultivations, etc.:
Sawyers I (R): Ploughed: Jan 9, 1964. Fertilisers applied: May 8. Rotary cultivated, potatoes machine planted: May 11. Earthed up: June 24. Sprayed 3 times with mancozeb at 1.2 lb in 35 gals:

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June 30, July 17, July 31. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 18. Lifted: Sept 25. Variety: King Edward.

Stackyard Series C (W):

Potatoes: First dressings of P,K and Mg applied, plots dug: Dec 2, 1963. Second dressings of PK and Mg and all N applied: Apr 23, 1964. Rotary cultivated, potatoes planted: Apr 28. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 3. Sprayed with dimethoate at 3 fluid oz in 40 gals: July 6. Sprayed with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 17. Lifted: Sept 9. Variety: King Edward.

Sugar beet: First dressing of P,K and Mg applied, plots dug: Dec 2, 1963. Second dressing of P,K and Mg and all N applied, plots rotary cultivated, seed drilled at 7 lb: Apr 23, 1964. Singled: June 4. Sprayed with dimethoate at 3 fluid oz in 40 gals: July 6. Lifted: Oct 13. Variety: Klein E.

NOTE: For details of previous years' results see 'Results' 60/Ci/3, 61/C/7, 62/C/6, 63/C/1.

Standard errors per plot.

Sawyers I (R):

Potatoes, total tubers: 0.724 or 10.9% (48 d.f.)

Stackyard Series C (W):

Potatoes, total tubers: 0.805 or 7.8% (8 d.f.)

Sugar beet, roots: 1.262 or 11.1% (8 d.f.)
total sugar: 4.500 or 11.5% (8 d.f.)
tops: 0.772 or 8.6% (8 d.f.)

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64/C/1.3

SUMMARY OF RESULTS

Sawyers I (R)

POTATOES, TOTAL TUBERS

	K0	K1	K2	MG0	MG1	MG2	Mean
		(±0.209)*			(±0.209)*		
CA1	3.05	7.97	9.51	6.76	7.07	6.70	6.84
CA2	2.12	7.30	9.84	6.43	6.41	6.42	6.42
Diff.	-0.93	-0.67 (±0.295)**	+0.33	-0.33	-0.66 (±0.295)**	-0.28	-0.42
					(±0.256)		(±0.148)
		K0		2.78	2.73	2.25	2.59
		K1		7.42	7.61	7.87	7.64
		K2		9.58	9.89	9.57	9.68
		Mean (±0.148)		6.59	6.74	6.56	6.63

* For use in horizontal and interaction comparisons only.
** For use only in testing the differences of 2 differences.

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64/C/1.4

Sawyers I (R)

POTATOES, % WARE

	K0	K1	K2	MG0	MG1	MG2	Mean
CA1	67.5	89.0	92.1	82.8	84.0	81.8	82.9
CA2	53.2	89.2	92.9	80.8	78.4	76.2	78.5
Diff.	-14.3	+0.2	+0.8	-2.0	-5.6	-5.6	-4.4
			K0	65.6	60.8	54.8	60.4
			K1	87.0	90.1	90.2	89.1
			K2	92.7	92.8	92.1	92.5
			Mean	81.8	81.2	79.0	80.7

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64/C/1.5

Stackyard Series C (W)

POTATOES, TOTAL TUBERS

	MG0	MG1	MG2	Mean
		(±0.569)		(±0.328)
K0	4.96	5.01	5.31	5.09
K1	10.67	12.55	12.01	11.74
K2	13.59	14.09	14.68	14.12
Mean (±0.328)	9.74	10.55	10.67	10.32

SUGAR BEET, ROOTS

		(±0.893)		(±0.515)
K0	5.63	7.47	7.15	6.75
K1	11.81	12.35	14.16	12.77
K2	14.69	14.37	14.89	14.65
Mean (±0.515)	10.71	11.40	12.07	11.39

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64/C/1.6

Stackyard Series C (W)

SUGAR BEET, SUGAR %

	MG0	MG1	MG2	Mean
K0	16.5	16.5	16.6	16.5
K1	17.3	17.3	17.6	17.4
K2	17.1	17.7	17.4	17.4
Mean	17.0	17.2	17.2	17.1

SUGAR BEET, TOTAL SUGAR

		(±3.18)		(±1.84)
K0	18.5	24.6	23.7	22.3
K1	40.8	42.7	49.8	44.4
K2	50.3	50.9	51.8	51.0
Mean (±1.84)	36.6	39.4	41.8	39.3

SUGAR BEET, TOPS

		(±0.546)		(±0.315)
K0	6.20	7.19	7.94	7.11
K1	9.43	9.03	10.32	9.59
K2	10.52	10.22	10.17	10.30
Mean (±0.315)	8.71	8.81	9.48	9.00

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64/C/2.1

INTENSIVE BARLEY GROWING EXPERIMENT

(IB)

Little Knott I - 1964, the fourth year

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

Area of each plot (acres): 0.0212. Area harvested: 0.0139.

Cultivations, etc.: Ploughed: Oct 7, 1963. All plots except winter wheat chisel ploughed: Dec 17.
Spring beans: Seed placement drilled at 200 lb (rows spaced at 10.5 ins): Feb 14, 1964. Combine harvested: Sept 2.
Oats: Seed combine drilled at 4 bushels: Mar 6, 1964. 'Nitro-Chalk' applied: Mar 9. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 22.
Spring wheat: Seed combine drilled at 3 bushels: Mar 11, 1964. 'Nitro-Chalk' applied: Mar 31. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 28.
Barley: Seed combine drilled at 2.5 bushels: Feb 13, 1964. 'Nitro-Chalk' applied: Feb 14. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 11.
Winter wheat: Seed combine drilled at 2.5 bushels: Oct 17, 1963. 'Nitro-Chalk' applied: Mar 5, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): May 12. Combine harvested: Aug 26.

NOTES: (1) Yields were taken only for sequences 1, 2, 5, 7, 8, 9 and 10.
(2) Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in spring and summer and percentage area lodged was estimated.
(3) For details of the previous years' results see 'Results' 61/C/8, 62/C/7 and 63/C/2.

Standard errors per plot. Grain:
Spring wheat (5 and 8): 2.70 or 8.3% (9 d.f.)
Barley (1,2,7 and 10): 3.52 or 9.1% (15 d.f.)

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64/C/2.2

SUMMARY OF RESULTS

GRAIN

WINTER WHEAT 9

Crop in 1961			SW			
Crop in 1962			WW			
Crop in 1963			WW			
			N0	N1	N2	N3	Mean
			23.4	21.7	29.6	33.4	27.0

Mean D.M. %: 87.2

SPRING WHEAT 5 AND 8

Crop in 1961			SW			SW	
Crop in 1962			SW			Be	
Crop in 1963			SW			O	
			N0	N1	N2	N3	N2	Mean
			16.0	22.8	32.9	32.4	38.7	32.4
				(±1.91)			(±0.95)	

Mean D.M. %: 83.8

BARLEY 1,2,7 AND 10

Crop in 1961	1962	1963	N0	N1	N2	N3	Mean
				(±2.49)			(±1.24)
B	B	B	18.5	27.6	29.5	34.2	27.4
O	Be	B	18.5	37.3	37.7	44.8	34.6
SW	O	Be	43.4	45.6	49.8	48.1	46.8
Be	WW	P	41.6	48.3	46.1	44.6	45.1
Mean (±1.24)			30.5	39.7	40.8	42.9	38.5

Mean D.M. %: 82.1

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64/C/3.1

LONG TERM LIMING EXPERIMENT - SPRING BEANS 1964

(LL and WLL)

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

Area of each sub plot: 0.0145. Area harvested: Sawyers I (R) - 0.0133, Stackyard Series C (W) - 0.0096.

Plots receiving both P and K were subdivided for a comparison between broadcasting of powder fertiliser (B) (rates and materials as before) and placement drilling of 409 lb 0:14:28(D).

Basal dressing: 0.25 cwt N as 'Nitro-Chalk' broadcast.

Cultivations, etc.

Sawyers I (R): Ploughed: Nov 14, 1963. Fertilisers applied: Feb 15, 1964. Seed drilled at 200 lb: Mar 6. Sprayed with simazine at 1 lb in 40 gals: Mar 13. Combine harvested: Aug 25. Variety: Spring Tick.

Stackyard Series C (W): Ploughed: Nov 1, 1963. Fertilisers applied and seed drilled* at 200 lb: Nov 8. Sprayed with simazine at 1 lb in 40 gals: Nov 9. Seed drilled* at 200 lb: Mar 13, 1964. Sprayed with simazine at 1 lb in 40 gals: Apr 6. Combine harvested: Aug 25. Variety: Spring Tick.

* The winter beans failed through bird damage and the spring beans were sown without seedbed cultivation.

NOTE: On Sawyers I (R) samples were taken at harvest for pod and bean counts.

Standard error per plot. Grain:

Main experiment

Sawyers I (R): 3.56 or 20.2% (15 d.f.)

Stackyard Series C (W): 1.62 or 10.5% (15 d.f.)

PK plots

Sawyers I (R): Whole plot: 2.46 or 12.4% (3 d.f.)
Sub plot: 0.96 or 4.8% (4 d.f.)

Stackyard Series C (W): Whole plot: 1.30 or 6.6% (3 d.f.)
Sub plot: 2.23 or 11.4% (4 d.f.)

Ground chalk tons per acre.

CA0 = None
CA2 = 2
CA4 = 4
CA8 = 8

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64/C/3.2

SUMMARY OF RESULTS

SAWYERS I (R)

GRAIN

Main experiment

	CA0	CA2	CA4	CA8	Mean
Mean (±1.26)	14.7	19.0	19.8	17.1	17.7
		(±1.78)			(±0.89)
-	15.1	20.2	19.7	16.2	17.8
P	14.4	17.8	19.9	18.0	17.5
-	15.2	16.6	17.5	14.7	16.0
K	14.2	21.4	22.0	19.5	19.3

	-	P
	(±1.26)	
-	16.7	15.3
K	18.9	19.7

Mean D.M. %: 83.0

PK plots

	CA0	CA2	CA4	CA8	Mean
		(1) and (2)			(±0.34)
B	15.1	21.6	22.8	19.2	19.7
D	15.9	21.5	22.4	20.9	20.1
Mean (±1.23)	15.5	21.5	22.6	20.0	19.9

Mean D.M. %: 82.5

(1) (±0.68) For use in vertical and diagonal comparisons
(2) (±1.80) For use in horizontal and interaction comparisons

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64/C/3.3

STACKYARD SERIES C (W)

GRAIN

Main experiment

	CA0	CA2	CA4	CA8	Mean
Mean (±0.57)	19.1	16.5	13.0	13.2	15.5
		(±0.81)			(±0.41)
-	18.1	16.3	12.4	12.4	14.8
P	20.0	16.7	13.6	14.1	16.1
-	16.6	12.8	10.9	10.7	12.7
K	21.6	20.3	15.2	15.7	18.2

	-	P
	(±0.57)	
-	13.1	12.4
K	16.5	19.8

Mean D.M. %: 83.9

PK Plots

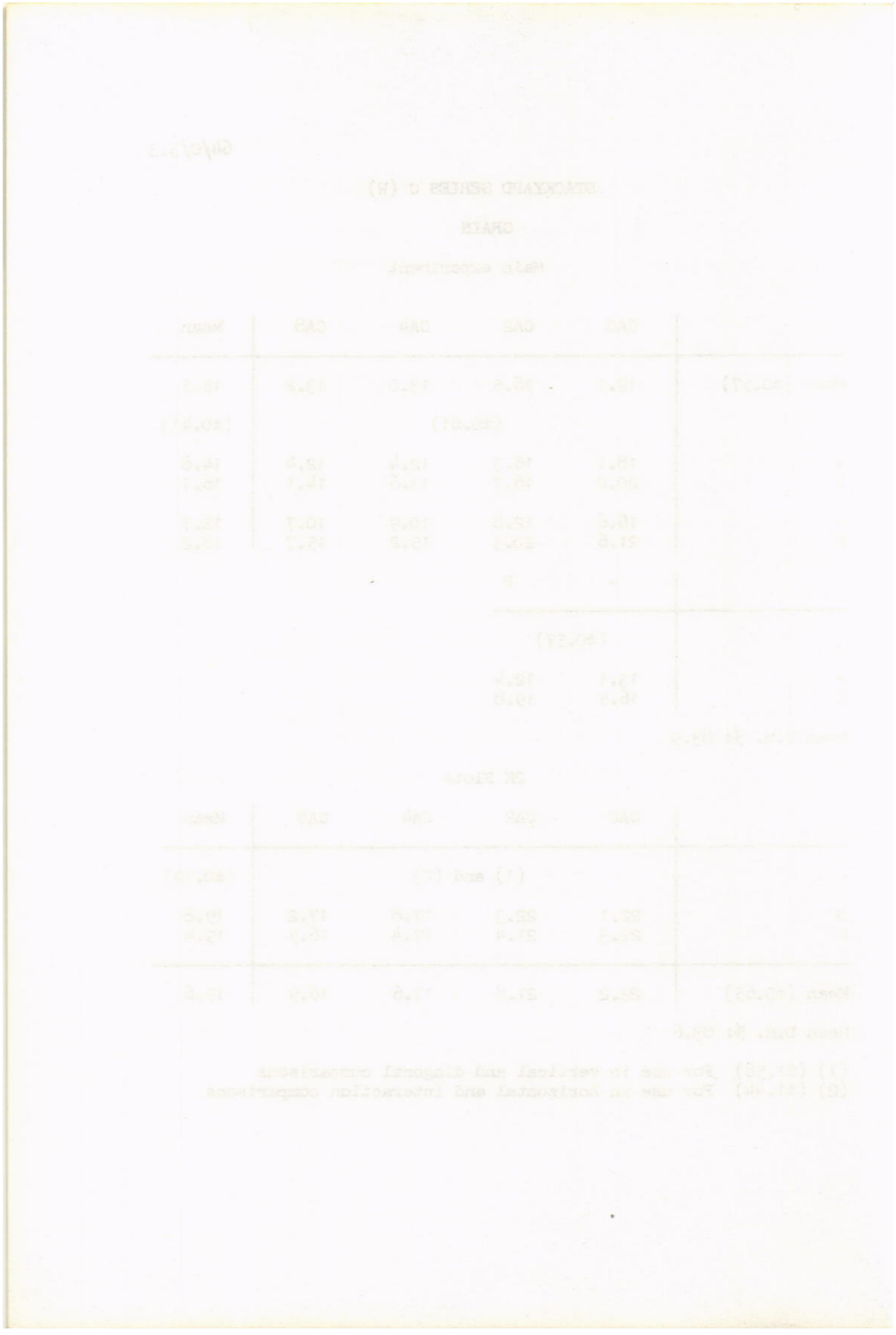
	CA0	CA2	CA4	CA8	Mean
		(1) and (2)			(±0.79)
B	22.1	22.3	17.8	17.2	19.8
D	22.3	21.4	17.4	16.5	19.4
Mean (±0.65)	22.2	21.8	17.6	16.9	19.6

Mean D.M. %: 83.6

(1) (±1.58) For use in vertical and diagonal comparisons
(2) (±1.44) For use in horizontal and interaction comparisons

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64/C/4.1

METHODS OF APPLICATION OF FERTILISER 1963 - 64

(AR/W)

Methods of application of fertiliser - Great Knott II 1964, the second year - winter wheat.

Design: 3 x 3 x 3 in 3 blocks of 9 plots each together with 3 additional plots per block.

Area of each plot: 0.0212. Area harvested: 0.0126.

Treatments:

3 x 3 x 3: All combinations of:-

To wheat 1964.

1. NPK: None (F0), 0.66 (F1), 1.32 (F2) cwt N as spring top dressings of 'Nitro-Chalk' each with superphosphate and muriate of potash applied in autumn in the seedbed in the proportion 13 N, 13 P_2O_5, 20 K_2O.

To potatoes 1963.

2. Levels of 13:13:20 to supply (cwt):

N	P_2O_5	K_2O
0.66	0.66	1.02 (L1)
1.32	1.32	2.03 (L2)
2.00	2.00	3.07 (L3)

3. Methods of application: Broadcast (B), placed (P), broadcast and rotary cultivated in (BR).

Additional plots:

To wheat 1964. NPK: F0, F1, F2 as above to plots receiving no treatment in 1963.

Basal dressing: None.

Cultivations, etc.: Chisel ploughed: Oct 24, 1963. PK applied, seed drilled at 3 bushels: Oct 28. 'Nitro-Chalk' applied - 1st half dressing: Apr 1, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 30. 'Nitro-Chalk' applied - 2nd half dressing: May 4. Combine harvested: Aug 27. Variety: Cappelle. Previous crop: Spring beans 1962.

NOTES: (1) For previous year's results see 'Results' 63/C/5.
(2) Green-crop and grain and straw samples were taken for NPK and dry matter determination.

Standard error per plot.

Grain: 2.30 or 4.6% (18 d.f.)

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SUMMARY OF RESULTS

GRAIN

	B	P	BR	L1	L2	L3	Mean
		(±1.33)			(±1.33)		(±0.77)
F0	42.2	44.9	47.9	39.5	45.2	50.3	45.0
F1	54.5	53.8	52.4	51.0	55.6	54.1	53.6
F2	53.2	56.4	53.5	54.5	55.2	53.4	54.4
					(±1.33)		
		B		48.3	51.0	50.7	50.0
		P		48.5	53.1	53.4	51.7
		BR		48.2	51.9	53.6	51.2
		Mean (±0.77)		48.3	52.0	52.6	50.5 (±0.44)

Plots untreated in 1963

F0	F1	F2	Mean
36.0	49.7 (±1.33)	54.8	46.8 (±0.77)

General mean: 49.6

Mean D.M. %: 86.3

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64/C/4.3

STRAW

	B	P	BR	L1	L2	L3	Mean
F0	28.2	32.2	33.4	28.0	30.4	35.4	31.3
F1	37.0	39.6	34.9	35.7	39.1	36.7	37.2
F2	43.0	46.5	43.7	45.7	43.9	43.6	44.4
		B		32.8	36.7	38.7	36.1
		P		38.6	40.7	39.0	39.4
		BR		37.9	36.0	38.0	37.3
		Mean		36.5	37.8	38.6	37.3

Plots untreated in 1963

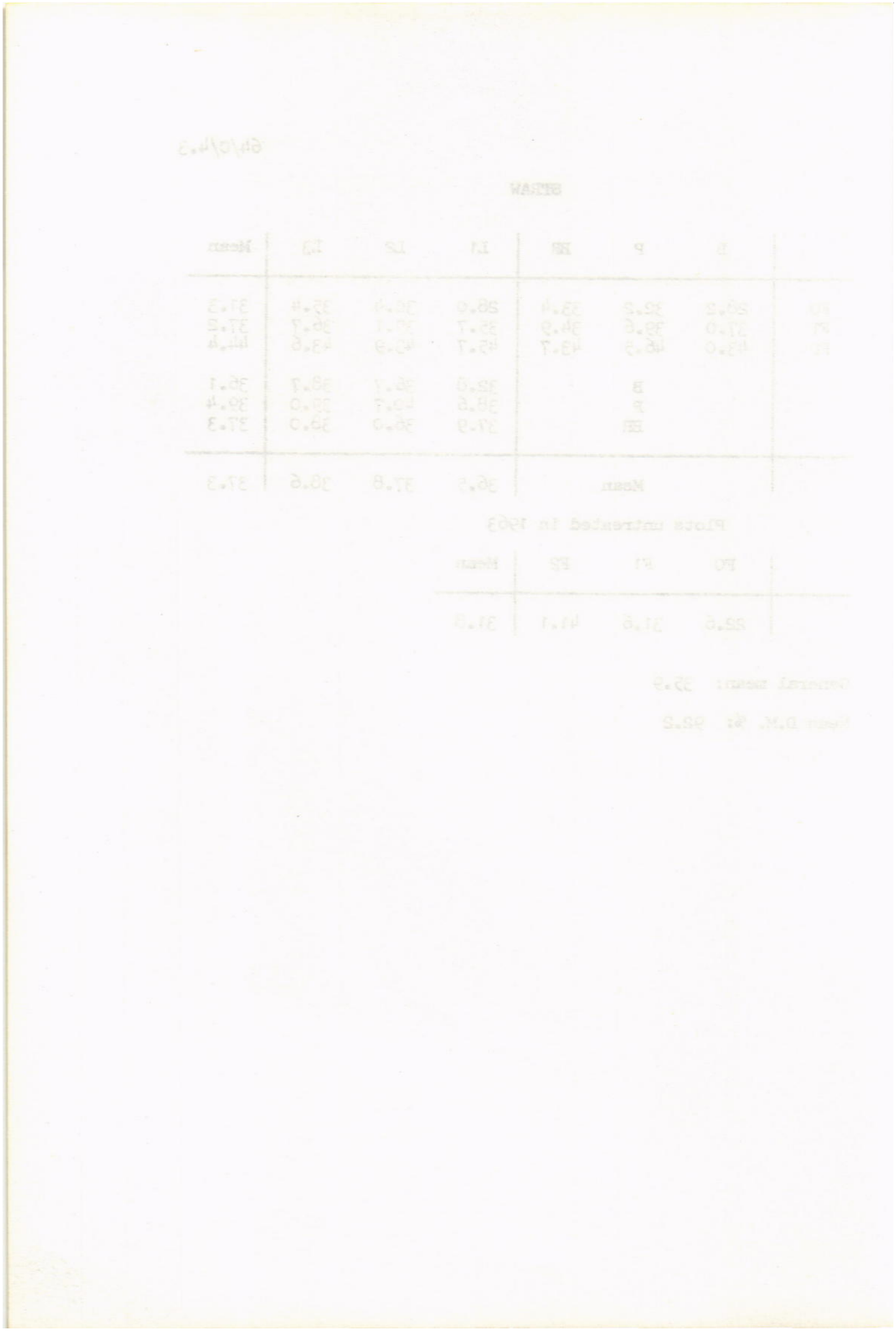
F0	F1	F2	Mean
22.6	31.6	41.1	31.8

General mean: 35.9

Mean D.M. %: 92.2

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64/C/5.1

METHODS OF APPLICATION OF FERTILISER 1964 - 65

(AY and WBC)

Methods of application of fertiliser - Rothamsted (R) Whittlocks and Woburn (W) Broad Mead II, 1964 the first year - potatoes.

Design (each field): 3 randomised blocks of 12 plots each.

Area of each plot: 0.0212. Area harvested: 0.0133.

Treatments: None (L0) (3 plots per block) and all combinations of:-

1. Levels of 13:13:20 to supply (cwt):

N	P_2O_5	K_2O	
0.66	0.66	1.02	(L1)
1.32	1.32	2.03	(L2)
2.00	2.00	3.07	(L3)

2. Methods of application: Broadcast (B), placed (P), broadcast and rotary cultivated in (BR).

NOTE: The experiment is designed to include an additional factor applied to the 1965 wheat crop, viz. PK broadcast on seedbed and 'Nitro-Chalk' as spring dressing to supply:-
N, P_2O_5 and K_2O at levels as (0), (1), (2) above.

Basal dressing: None.

Cultivations, etc.:

Whittlocks (R). Ploughed: Oct 11, 1963. Fertilisers applied to ploughing: Apr 8, 1964. Rotary cultivated, fertilisers applied, potatoes planted: Apr 15. Earthed up: June 12. Sprayed three times with mancozeb at 1.2 lb in 35 gals: June 30, July 16, July 31. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 8. Lifted: Sept 15. Variety: King Edward. Previous crops: Winter and spring wheat 1962, spring wheat 1963.

Broad Mead (W). Ploughed twice: Oct 2, 1963 and Jan 13, 1964. Fertilisers applied to ploughing: Apr 9. Rotary cultivated: Apr 13. Fertilisers applied, potatoes planted: Apr 14. Sprayed with diquat/paraquat (Preeglone Extra at 2 pints in 40 gals): May 12. Sprayed with mancozeb at 1.6 lb in 50 gals: June 25, and again at 1.2 lb in 36 gals: July 14. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 2. Lifted: Sept 10. Variety: King Edward. Previous crops: Spring wheat 1962, barley 1963.

Standard errors per plot. Total tubers:

Whittlocks (R):	0.610 or 5.6% (24 d.f.)
Broad Mead II (W):	1.985 or 17.4% (24 d.f.)

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64/C/5.2

SUMMARY OF RESULTS

WHITTLOCKS (R)

	L0	L1	L2	L3	Mean
		TOTAL TUBERS			
		(±0.352)			(±0.203)
B		11.23	12.83	13.92	12.66
P		10.72	13.04	13.27	12.34
BR		10.27	13.01	14.60	12.63
Mean (±0.209)	6.18	10.74	12.96	13.93	10.95*
		% WARE			
B		90.4	90.1	91.4	90.6
P		86.3	91.7	91.4	89.8
BR		88.3	91.9	91.1	90.4
Mean	82.0	88.3	91.2	91.3	88.2*

* General mean

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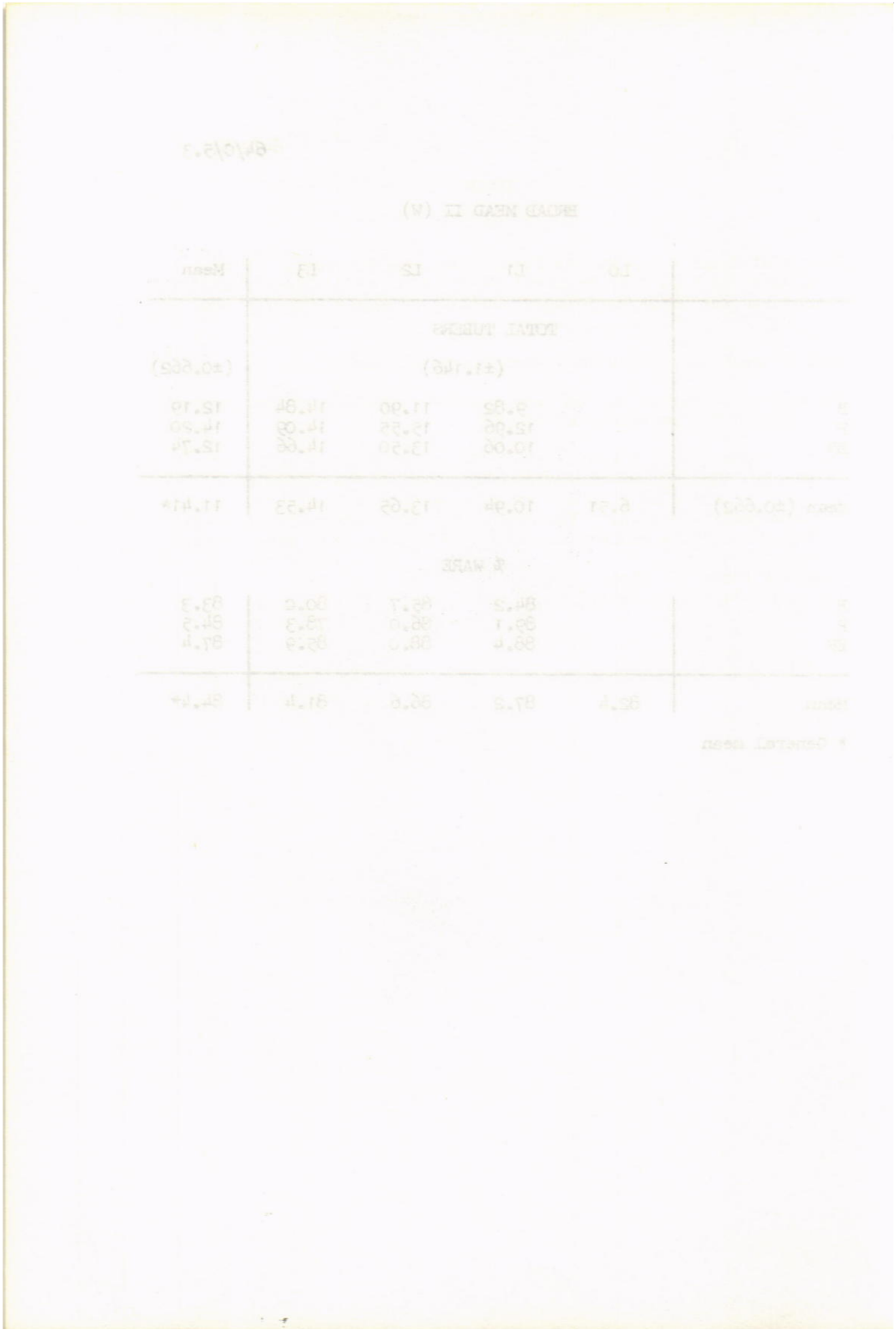
64/C/5.3

BROAD MEAD II (W)

	L0	L1	L2	L3	Mean
		TOTAL TUBERS			
		(±1.146)			(±0.662)
B		9.82	11.90	14.84	12.19
P		12.96	15.55	14.09	14.20
BR		10.06	13.50	14.66	12.74
Mean (±0.662)	6.51	10.94	13.65	14.53	11.41*
		% WARE			
B		84.2	85.7	80.0	83.3
P		89.1	86.0	78.3	84.5
BR		88.4	88.0	85.9	87.4
Mean	82.4	87.2	86.6	81.4	84.4*

* General mean

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GRASS

(AF)

Levels of N and K - Harwoods Piece 1964, the 7th year. For treatments etc. see 'Results' 63/C/7 and for previous years' results see 58/Cg/2, 59/Cg/2, 60/Ci/1, 61/Dg/1, 62/C/11 and 63/C/7.

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

The Cocksfoot failed and was replaced by a mixture of Timothy at 8 lb and Meadow Fescue at 12 lb.

Cultivations, etc.: P and first dressings of N and K applied: Mar 23, 1964. Cut once: June 3. Sprayed with 3 amino-1,2,4 triazole at 6 lb and ammonium thiocyanate at 5.55 lb in 40 gals: June 10. Ploughed: July 3. Rotary cultivated: Aug 14. Grass resown: Aug 20. No further cuts were taken.

Standard error per plot.
Dry matter: 2.41 or 11.9% (33 d.f.)

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64/C/6.2

SUMMARY OF RESULTS

DRY MATTER

cwt per acre N*	P2O5	K2O*											Mean
0.0	0.6	0.0	9.5	22.1	22.2	21.3	19.5	24.4	22.3	17.2	22.1	21.0	20.3
0.3	0.6	0.0											
0.6	0.6	0.0											
0.0	0.6	0.3											
0.3	0.6	0.3											
0.6	0.6	0.3											
0.0	0.6	0.6											
0.3	0.6	0.6											
0.6	0.6	0.6											
0.0	0.6	0.9											
0.3	0.6	0.9											
0.6	0.6	0.9											
0.0	0.6	0.9											
0.3	0.6	0.9											
0.6	0.6	0.9											

(±1.20)

Mean D.M. %: 21.3

* For each cut

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64/C/7

DECLINE OF TAKE-ALL

(AD)

The effect of crop sequences on the decline of take-all (Ophiobolus graminis) - Great Field I 1964, the second year.

Design: 3 randomised blocks of 6 plots each (5 of winter wheat, 1 of oats), using the plots of Series III of the Cereals and Beans Rotations Experiment (see 'Results' 61/C/1).

Area of each plot: 0.0305. Area harvested: 0.0199.

Treatments: 6 crop sequences. For details see 'Results' 63/C/8.

Basal dressings: 2.5 cwt compound fertiliser (0:20:20) combine drilled. 1.0 cwt N to wheat and 0.4 cwt N to oats applied in spring as 'Nitro-Chalk'.

Cultivations, etc.: Sprayed with aminotriazole (Weedazol-TL at 2 gals in 40): Oct 1, 1963. Ploughed: Oct 30. Winter wheat drilled at 2.5 bushels: Nov 13. 'Nitro-Chalk' applied to winter wheat: Mar 5, 1964. Oats drilled at 4 bushels: Mar 7. 'Nitro-Chalk' applied to oats: Mar 9. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 27. Combine harvested: Oats - Aug 22, winter wheat - Aug 26. Varieties: Winter wheat - Cappelle, oats - Condor.

NOTES: (1) Yields were taken for winter wheat only.
(2) Estimates were made on 6 occasions of the incidence of take-all on wheat.
(3) For details of the previous year's results see 'Results' 63/C/8.

Standard error per plot. Winter wheat.
Grain: 2.32 or 6.1% (8 d.f.)

SUMMARY OF RESULTS

GRAIN

Crop in 1959 1960 1961 1962 1963	W W WS W W	W O WS W W	B W B W W	W O Be W W	WS W WS W O	Mean
	38.3	36.4	39.5 (±1.34)	35.4	40.7	38.1

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64/C/8

CHEMICAL CONTROL OF TAKE-ALL

(AP)

The chemical control of take-all (Ophiobolus graminis) in winter wheat - Highfield Drive 1964, the second year.

Design: 3 randomised blocks of 5 plots each.

Area of each plot: 0.0072. Area harvested: 0.0070.

Treatments: None (0) and all combinations of:-
1. Rates of spraying: heptachlor at 4 lb in 70 gallons (H4), at 8 lb in 140 gallons (H8).
2. Times of spraying: in 1964 only (S1), in 1963 and in 1964 (S2).

Basal dressings: 2.5 cwt (0:20:20) combine drilled. 1 cwt N as 'Nitro-Chalk' applied as spring top dressing.

Cultivations, etc.: Ploughed: Sept 26. Heptachlor treatments applied: Oct 8, 1963. Rotary cultivated twice: Oct 10 and 14, 1963. Seed drilled at 2.5 bushels: Oct 14. 'Nitro-Chalk' applied: Apr 15, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 27. Combined harvested: Aug 26. Variety: Cappelle.

NOTE: (1) Estimates were made of the incidence of take-all on 3 occasions.
(2) For previous year's results see 'Results' 63/C/9.

S.E. per plot.
Grain: 0.99 or 2.6% (8 d.f.)

SUMMARY OF RESULTS

GRAIN

0	H4 S1	H8 S1	H4 S2	H8 S2	Mean
35.8	37.3	39.1 (±0.57)	37.4	38.1	37.6

Mean D.M. %: 86.6

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64/C/9.1

CEREAL DISEASE REFERENCE PLOTS

(AQ)

Pennells Piece 1964, the second year

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

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

Cultivations, etc.: Ploughed: Oct 8, 1963. All plots except winter wheat chisel ploughed: Dec 17.
Winter wheat: Seed combine drilled at 2.5 bushels: Oct 19, 1963. 'Nitro-Chalk' applied: Mar 5, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): May 12. Combine harvested: Aug 26.
Spring wheat: Seed combine drilled at 3 bushels: Mar 11, 1964. 'Nitro-Chalk' applied: Mar 31. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 28.
Oats: Seed combine drilled at 4 bushels: Mar 7, 1964. 'Nitro-Chalk' applied: Mar 9. Sprayed with MCPA/dichlorprop (Seritox at 8 pints in 40 gals): May 15. Combine harvested: Aug 22.
Spring beans: Seed placement drilled at 200 lb (rows spaced at 10.5 ins): Feb 14, 1964. Combine harvested: Sept 2.

NOTE: (1) Yields were taken only for winter and spring wheat.
(2) Estimates of the incidence of take-all (Ophiobolus graminis), eyespot (Cercosporella herpotrichoides) and sharp eyespot (Corticium solani) were made on 7 occasions for winter and 3 for spring wheat.
(3) For previous year's results see 'Results' 63/C/10.

Standard errors per plot. Grain:
Winter wheat: 1.36 or 3.5% (5 d.f.)
Spring wheat: 2.85 or 9.4% (5 d.f.)

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64/C/9.2

SUMMARY OF RESULTS

GRAIN

WINTER WHEAT

Crop in 1963

WW	O	Mean	Diff
37.9	39.1	38.2	1.2
(±0.55)	(±0.96)		(±1.11)

SPRING WHEAT

Crop in 1963

SW	O	Mean	Diff
28.0	36.6	30.2	8.6
(±1.16)	(±2.01)		(±2.32)

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64/C/10.1

CUTTING AND VIRUS

(CV)

An investigation of cocksfoot mottle and lucerne mosaic viruses, and of the effect of cutting on the spread of these viruses, Long Hoos I and II, 1964 the second year.

Design: 3 randomised blocks of 4 plots each, plots being subdivided into 3 for crops.

Area of each sub plot: 0.0220. Area harvested: 0.0046.

Treatments: All combinations of:-
- Sub plots: 1. Crops: Cocksfoot S143* (C), Chartrainvilliers lucerne (Lu), C and Lu in alternate rows (M).
- Whole plots: 2. Number of cuts: 3 cuts (3), 5 cuts (5). For treatment 3 the cuts are on the occasions of the 1st, 3rd and 5th cuts for treatment 5.
- 3. Virus disease introduced: None (0), cocksfoot mottle to C, or lucerne mosaic to Lu (V).

* Certain sub plots were later resown with Cocksfoot S137, the arrangement was modified so that the whole plots involved constituted one block. The yields from this resown block have been omitted from the analysis.

Basal dressings. C and M: 5 cwt 6:15:15 and 2 cwt 'Nitro-Chalk' (21% N) in spring, 4 cwt 16:0:16 after 1st and 3rd cuts. Lu: 5 cwt 6:15:15 in spring, 2 cwt 0:14:28 after 1st and 3rd cuts.

Cultivations, etc.:-

1963: Ploughed: Sept 11, 1962. Basal NPK compound applied: May 6, 1963. 'Nitro-Chalk' applied to C and M sub plots: May 13. Lucerne drilled at 17 lb, cocksfoot at 8 lb (8.5 and 4 lb on M sub plots): May 15. Sprayed with 2,4-DB at 48 oz a.e. in 40 gals: June 27. Topped with mower: July 26. Basal NK and PK compounds applied: July 31. Sub plots 3a, 4a, 5a and 7c failed because of weeds, rotary cultivated: Aug 20, rotary cultivated again and drilled with Cocksfoot S137 at 12 lb: Sept 16. Cut (except resown plots): Oct 4.

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1964: Lu sub plots sprayed with paraquat at 2 lb ion in 40 gals: Feb 12, 1964. 'Nitro-Chalk' applied to C and M sub plots: Mar 3. Basal NPK compound applied: Mar 11. Treatment 3 cut: May 29, July 30, Oct 20. Treatment 5 cut: May 29, July 1, July 30, Sept 2, Oct 20. Irrigated: Aug 11 (1 in.) and 21 (1 in.). Basal NK and PK applied after 1st and 3rd cuts. Previous crops: Kale 1961, barley 1962.

NOTES (1) No yields were taken in 1963.
(2) Leaf samples were taken for virus identification.

Standard errors per plot.		Dry matter:
1st cut	Whole plot:	0.63 or 1.6% (3 d.f.)
	Sub plot:	4.80 or 12.5% (8 d.f.)
3rd cut	Whole plot:	2.66 or 12.6% (3 d.f.)
	Sub plot:	2.78 or 13.2% (8 d.f.)
5th cut	Whole plot:	0.66 or 4.2% (3 d.f.)
	Sub plot:	1.33 or 8.3% (8 d.f.)
Total of 5 cuts	Whole plot:	4.00 or 4.3% (3 d.f.)
	Sub plot:	12.01 or 12.8% (8 d.f.)

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64/C/10.3

SUMMARY OF RESULTS

DRY MATTER

	O	V	3	5	Mean
			1ST CUT		
	(1) and (2)		(1) and (2)		(±1.70)
C	51.6	49.6	49.7	51.5	50.6
Lu	19.0	21.0	19.1	20.9	20.0
M	44.4	44.8	46.9	42.3	44.6
			(±0.45)		(±0.32)
		O	38.1	38.6	38.3
		V	39.0	37.9	38.5
Mean (±0.32)			38.5	38.2	38.4
			3RD CUT		
	(1) and (2)		(1) and (2)		(±0.98)
C	18.7	16.6	28.1	7.3	17.7
Lu	22.1	23.2	34.0	11.3	22.6
M	23.7	22.4	36.6	9.6	23.1
			(±1.88)		(±1.33)
		O	33.4	9.7	21.5
		V	32.4	9.1	20.8
Mean (±1.33)			32.9	9.4	21.1

Mean D.M. %: 1st cut 20.4
3rd cut 22.5

	1st cut	3rd cut	
(1)	(±2.40)	(±1.39)	For use in vertical and interaction comparisons
(2)	(±1.98)	(±1.75)	For use in horizontal and diagonal comparisons

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64/C/10.4

DRY MATTER

	0	V	3	5	Mean
			5TH CUT		
	(1) and (2)		(1) and (2)		(±0.47)
C	16.0	15.5	27.4	4.1	15.8
Lu	15.2	14.4	26.3	3.3	14.8
M	17.7	16.8	29.7	4.7	17.2
			(±0.47)		(±0.33)
		0	28.6	4.0	16.3
		V	27.1	4.1	15.6
Mean (±0.33)			27.8	4.1	15.9
			TOTAL OF 5 CUTS		
	(1) and (2)		(1) and (2)		(±4.25)
C	104.5	99.1	105.2	98.4	101.8
Lu	73.5	75.2	79.4	69.3	74.3
M	108.3	104.2	113.2	99.3	106.2
			(±2.83)		(±2.00)
		0	100.0	90.8	95.4
		V	98.5	87.2	92.8
Mean (±2.00)			99.3	89.0	94.1

Mean D.M. %: 5th cut 25.0

	5th cut	Total of 5 cuts	
(1)	(±0.66)	(±6.00)	For use in vertical and interaction comparisons
(2)	(±0.64)	(±5.30)	For use in horizontal and diagonal comparisons

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64/C/11.1

N AND NPK RESIDUES

(AX)

An investigation of the relative importance of short term N and PK residues - Fosters West Side 1964.

Crops in 1964: Spring wheat and kale.

Design: 4 randomised blocks of 16 plots each, with sub blocks of 8 plots each per crop.

Area of each plot: 0.0193. Area harvested: Spring wheat - 0.0129, kale - 0.0087.

Treatments (broadcast in seedbed): All combinations of:-
1. N: None (N0), 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt as 'Nitro-Chalk'.
2. PK: None (0), 2.0 cwt P205 and 2.0 cwt K20 as 0:20:20 (C).

Basal dressing: None.

Cultivations, etc.: Ploughed twice: Oct 8 and Dec 2, 1963.
Spring wheat. Fertilisers applied: Mar 31, 1964. Seed drilled at 2.75 bushels: Apr 2. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 28. Combine harvested: Aug 31. Variety: Jufy 1.
Kale. Fertilisers applied: Apr 1, 1964. Seed drilled at 2 lb: May 7. Harvested: (by blocks) Nov 5, 12, 19, 26. Variety: Thousand Head.
Previous crops: Sugar beet 1962, spring wheat 1963.

NOTE: The spring wheat was affected by take-all (Ophiobolus graminis).

Standard errors per plot.
Spring wheat, grain: 3.29 or 12.5% (21 d.f.)
Kale, fresh weight: 1.724 or 11.6% (21 d.f.)

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64/C/11.2

SUMMARY OF RESULTS

	N0	N1	N2	N3	Mean
		SPRING WHEAT			
		GRAIN			
		(±1.65)			(±0.82)
O	16.5	26.2	30.3	29.2	25.5
C	14.1	28.0	33.9	33.1	27.3
Mean (±1.16)	15.3	27.1	32.1	31.1	26.4

Mean D.M.%: 85.6

KALE

FRESH WEIGHT

		(±0.862)			(±0.431)
O	9.17	15.38	17.12	19.07	15.19
C	9.61	14.47	15.59	18.74	14.60
Mean (±0.610)	9.39	14.93	16.35	18.91	14.89

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64/C/12.1

CHEMICAL CONTROL OF WIREWORMS

(BB)

New Zealand 1964, the first year - Spring wheat.

Design: 4 randomised blocks of 12 plots each.

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

Treatments. Insecticides:-

None (3 plots per block)		(O)
Sprays (active ingredient, in 158 gals):-		
'Bayer 38156'	(1.5 lb)	(As)
'Bayer 37289'	(1.5 lb)	(Bs)
Zinophos	(1.5 lb)	(Cs)
'Sumithion'	(1.5 lb)	(Ds)
Aldrin	(2.25 lb)	(Es)
Seed dressings (active ingredient per bushel):-		
'Bayer 38156'	(0.5 oz)	(Ad)
'Bayer 37289'	(0.5 oz)	(Bd)
BHC	(0.5 oz)	(Fd)
Dieldrin	(12.0 oz)	(Gd)

Basal dressings: 2.5 cwt (20:10:10) combine drilled, organo-mercury fungicide dressing applied to seed.

Cultivations, etc.: Ploughed: Dec 7, 1963. Sprays applied: Mar 13, 1964. Seed drilled at 3 bushels: Apr 1. Sprayed with 2,4-D butoxyethylester at 0.66 lb a.e. in 40 gals: May 20. Combine harvested: Aug 31. Variety: Jufy I. Previous crop: Old grass.

NOTE: Plant samples were taken on 8th May for estimation of wireworm damage.

Standard error per plot.
Grain: 2.25 or 6.6% (35 d.f.)

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64/C/12.2

SUMMARY OF RESULTS

GRAIN

	Mean		Increase
			(±1.30)
O	33.9	(±0.65)	
As	36.1		+2.2
Bs	35.3		+1.4
Cs	34.8		+0.9
Ds	34.8		+0.9
Es	35.2	(±1.12)	+1.3
Ad	32.5		-1.4
Bd	34.3		+0.4
Fd	32.6		-1.3
Gd	34.5		+0.6
Mean	34.3		

Mean D.M. %: 87.4

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64/C/13.1

LUCERNE

(AZ)

Row spacing, N and paraquat, Long Hoos VII 1964.

Design: 4 randomised blocks of 12 plots each.

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

Treatments: All combinations of:-

1. Row spacing: 8 inches (C), 16 inches (W).
2. Nitrogen: None (N0), 0.25 (N1), 0.5 (N2) cwt N as 'Nitro-Chalk' applied to seedbed.
3. Paraquat (to be applied in spring 1965): None (P0), sprayed with paraquat (P1).

Basal dressing: 4 cwt 0:14:28 in winter and 2 cwt after each cut except the last.

Cultivations, etc.: Ploughed: Sept 18, 1963. Sprayed twice with sodium trichloroacetate at 18 lb in 40 gals: Sept 25 and Oct 23. Chisel ploughed: Dec 17. Basal PK compound applied: Apr 14, 1964. 'Nitro-Chalk' applied: Apr 15. Rotary cultivated: May 5. Rotary cultivated second time, seed drilled at 28 lb: May 29. Sprayed with 2,4-DB at 42 oz a.e. in 40 gals: July 7. Cut: Aug 5. Basal PK compound applied: Aug 12. Irrigated: Aug 10, (1 in), Aug 11, (1 in), Aug 21, (1 in), Aug 22, (1 in). Cut second time: Oct 30. Variety: Du Puits. Previous crops: Winter wheat 1962 and 1963.

Standard errors per plot. Dry matter:

1st cut: 2.49 or 21.3% (39 d.f.)
2nd cut: 8.44 or 39.3% (39 d.f.)
Total of 2 cuts: 9.25 or 27.8% (39 d.f.)

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SUMMARY OF RESULTS

DRY MATTER

	N0	N1	N2	Mean
		1ST CUT		
		(±0.88)		(±0.51)
C	12.2	12.7	14.1	13.0
W	9.9	9.0	12.0	10.3
Mean (±0.62)	11.0	10.8	13.1	11.7

Mean D.M. %: 28.9

		2ND CUT		
		(±2.98)		(±1.72)
C	19.4	23.2	24.7	22.4
W	18.2	23.6	19.9	20.6
Mean (±2.11)	18.8	23.4	22.3	21.5

Mean D.M. %: 23.4

		TOTAL OF 2 CUTS		
		(±3.27)		(±1.89)
C	31.6	35.9	38.8	35.4
W	28.1	32.6	31.9	30.9
Mean (±2.31)	29.9	34.2	35.4	33.2

Mean D.M. %: 26.2

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64/C/14.1

PARAQUAT EXPERIMENT

(BA)

A comparison of methods of preparing a seedbed for spring wheat following a grass and clover ley, and an investigation of the effect of paraquat on soil fauna - Pastures 1964, the first year.

Design: 4 randomised blocks of 8 plots each, plots being split into 4 for the application of N.

Area of each sub plot: 0.0145. Area harvested: 0.0064.

Treatments: All combinations of:-

1. Seedbed preparation: No paraquat, plough, roll and disc (P), paraquat application followed by either ploughing, rolling and disc-harrowing (GP), or by rotary cultivation (GR), or by sod seeding (G).
   The paraquat was applied at 2 lb ion in 40 gals.
2. Seed dressing: Fungicide only (-), insecticide and fungicide (I).
3. Nitrogen (to sub plots): None (N0), 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N as 'Nitro-Chalk'.

NOTE: (1) A further sub plot at the east end of each plot received 0.6 cwt N as 'Nitro-Chalk' and an insecticide mixture of 4 lb diazinon and 10 lb chlordane in 160 gals. No yields were taken.

Basal dressing: 2 cwt compound fertiliser (0:20:20) combine drilled.

Cultivations, etc.: G, GP and GR plots sprayed with paraquat: Feb 28, 1964. P and GP plots ploughed: Mar 5. P and GP plots rolled in tandem: Mar 6. P and GP plots disced twice: Mar 7 and Mar 9. GR plots rotary cultivated: Mar 10. Seed drilled at 3 bushels: Apr 1. 'Nitro-Chalk' applied: Apr 7. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 15. Combine harvested: Sept 1. Variety: Opal. Previous crop: 6 year grass and clover ley.

NOTES: (2) Plant counts were taken early in the season and the percentage cover by weeds was estimated after harvest.
(3) The sod seeded (G) plots, the remainder of one block and one other plot (PI) were sown by a drill modified for sod seeding, but this drill tended to sink in on the cultivated plots, consequently the rest of the experiment was sown with the normal farm drill.

Standard errors per plot. Grain:
Whole plot: 3.54 or 11.5% (21 d.f.)
Sub plot: 3.11 or 10.1% (72 d.f.)

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64/C/14.2

SUMMARY OF RESULTS

SPRING WHEAT

GRAIN

	P	GP	GR	G	Mean
		(±1.25)			
Mean	39.3	37.4	32.8	13.5	30.7
		(±1.77)			(±0.88)
-	38.3	34.8	36.1	12.6	30.5
I	40.3	40.1	29.4	14.4	31.0
		(1) and (2)			(±0.55)
N0	33.3	30.4	25.9	9.3	24.7
N1	38.8	36.4	33.7	12.5	30.3
N2	40.2	39.2	33.7	14.5	31.9
N3	45.1	43.7	37.8	17.7	36.1

	N0	N1	N2	N3
		(3) and (4)		
-	24.6	30.5	30.8	36.0
I	24.9	30.2	33.0	36.1

Mean D.M. %: 85.4

(1) ±1.10 For use in vertical and interaction comparisons.
(2) ±1.57 For use in horizontal and diagonal comparisons.
(3) ±0.78 For use in horizontal and interaction comparisons.
(4) ±1.11 For use in vertical and diagonal comparisons.

NOTE: The paraquat failed to kill the old turf and the low yields of the 'G' plots were due to the competition of the grass.

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64/C/15.1

IRRIGATION EXPERIMENT

(IRA and IRB)

The effect of irrigation on potatoes and grass - preliminary year, Great Field I and II 1964.

Design:

Potatoes: A single replicate of 4 x 2 x 2 x 2 x 2 in two blocks, a component of the 5 factor interaction being confounded with blocks. Each block is divided into 4 whole plots for the irrigation treatments, and at right angles into 4 strips for varieties and spacing. There is a further split for chitting and N.

Grass ley. 2 randomised blocks of 4 plots each, plots being divided into 4 sub plots each.

Area of each sub plot:-

Potatoes: 0.0204. Area harvested: 0.0080.
Grass: 0.1598. Area harvested: 0.0046.

Treatments. Potatoes: All combinations of:-

Whole plots
1. Irrigation: None (O), early (A), late (B), full (C).

To strips of 1/4 plots
2. Varieties: Majestic (M), King Edward (E).
3. Spacing: Seed 12 inches (1), 18 inches (2) apart in the rows.

1/8 plots
4. Chitting: None (O), seed chitted (Ch).
5. Nitrogen: 0.75 (N1), 1.5 (N2) cwt N as 'Nitro-Chalk' broadcast on the flat before rotary cultivation.

Grass ley: All combinations of:-

Whole plots
1. Irrigation: None (O), irrigated (C).
2. Species: S215 Meadow Fescue at 30 lb (F), Timothy at 23 lb (T).

Sub plots
3. Nitrogen: None, 0.3, 0.6, 0.9 cwt N as 'Nitro-Chalk' in seedbed and after each cut except the last (NO, N1, N2, N3).

Basal dressing:

To potatoes: 2 cwt P_2O_5 and 4 cwt K_2O as 0:14:28 rotary cultivated in.
To grass ley: 2 cwt P_2O_5 and 2 cwt K_2O as 0:20:20 in seedbed.

Cultivations, etc.:-

Potatoes: Sprayed with dalapon at 5.9 lb acid equivalent in 4 gals: Oct 9, 1963 and again at 2.95 lb: Oct 22. Ploughed: Nov 6 - 28.

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Basal dressing applied: Apr 6, 1964. 'Nitro-Chalk' applied, rotary cultivated, potatoes planted: Apr 30. Earthed up: June 22. Sprayed three times with mancozeb at 1.2 lb in 35 gals: June 30, July 17, July 31. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 18. Lifted: Sept 24. Previous crops: Winter wheat 1962, barley 1963.

Grass ley: Ploughed: Nov 1, 1963. Basal dressing applied: Apr 7, 1964. Seedbed 'Nitro-Chalk' applied, seed drilled: Apr 30. Sprayed with 2,4-D butoxyethyl ester at 0.44 lb acid equivalent in 40 gals: June 10. Cut: July 22. 'Nitro-Chalk' applied: July 27. Cut: Sept 7. Previous crops: Winter wheat 1962, barley 1963.

Standard errors per plot.

Potatoes, total tubers

1/4 plot: 0.389 or 2.7% (8 d.f.)

1/8 plot: 1.142 or 8.0% (20 d.f.)

Grass ley, dry matter

Sub plot: 1st cut: 2.78 or 17.0% (12 d.f.)

2nd cut: 1.86 or 18.3% (12 d.f.)

Total of 2 cuts: 3.01 or 11.3% (12 d.f.)

RAINFALL AND IRRIGATION: INCHES

WEEK ENDING		RAINFALL	POTATOES A	POTATOES B	POTATOES C	GRASS C
MAY	5	0.43				
	12	0.06				
	19	0.29				
	26	0.46				
JUNE	2	1.08				
	9	0.85				
	16	0.90				
	23	1.46				
	30	0.00				
JULY	7	0.24				
	14	0.65				
	21	0.29				
	28	0.06	1.00		1.00	
AUG	4	0.03				0.50
	11	0.07				1.50
	18	0.32		1.00	1.00	
	25	0.05				1.00
SEPT	1	0.03				
	8	0.10				
	15	0.44				
	22	0.18				
	29	0.00				
OCT	6	0.31				
TOTAL		8.30	1.00	1.00	2.00	3.00

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64/C/15.3

SUMMARY OF RESULTS

POTATOES

TOTAL TUBERS

	0	A	B	C	Mean
Mean	13.02	14.85	12.81	16.18	14.21
		(±0.137)*			(±0.069)
M	13.68	15.93	13.66	17.35	15.15
E	12.36	13.77	11.95	15.01	13.27
		(±0.137)*			(±0.069)
S1	12.91	14.68	12.85	15.95	14.10
S2	13.13	15.02	12.76	16.41	14.33
		(±0.404)*			(±0.202)
0	12.96	14.43	12.85	15.81	14.01
Ch	13.08	15.27	12.77	16.55	14.41
		(±0.404)*			(±0.202)
N1	12.40	14.55	11.77	15.38	13.52
N2	13.64	15.14	13.85	16.98	14.90
		(±0.194)*			
M S1	13.77	15.96	13.94	17.34	15.25
E S1	12.06	13.39	11.75	14.56	12.94
M S2	13.59	15.89	13.38	17.37	15.06
E S2	12.67	14.15	12.15	15.46	13.61
		(±0.571)*			
M 0	13.66	14.47	13.65	17.03	14.70
E 0	12.26	14.39	12.05	14.60	13.32
M Ch	13.69	17.39	13.67	17.68	15.61
E Ch	12.47	13.15	11.86	15.42	13.22
		(±0.571)*			
M N1	13.36	16.32	12.99	16.48	14.79
E N1	11.44	12.79	10.54	14.28	12.26
M N2	14.00	15.53	14.33	18.23	15.52
E N2	13.28	14.75	13.36	15.74	14.28

* For use in vertical and interaction comparisons

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64/C/15.4

% WARE

	O	A	B	C	Mean
Mean	92.4	95.0	92.4	95.9	93.9
M	94.9	96.7	95.3	97.3	96.1
E	89.9	93.3	89.4	94.5	91.8
S1	90.7	94.5	91.3	95.4	93.0
S2	94.1	95.6	93.5	96.3	94.9
O	92.2	94.8	92.2	95.7	93.7
Ch	92.6	95.3	92.6	96.1	94.1
N1	91.0	94.3	91.3	95.4	93.0
N2	93.8	95.8	93.5	96.4	94.9
M S1	94.1	96.6	94.4	97.1	95.5
E S1	87.2	92.4	88.3	93.8	90.4
M S2	95.7	96.9	96.3	97.5	96.6
E S2	92.5	94.3	90.6	95.2	93.1
M O	94.6	96.7	95.1	97.5	96.0
E O	89.8	92.9	89.2	93.9	91.5
M Ch	95.2	96.8	95.5	97.1	96.2
E Ch	89.9	93.8	89.7	95.1	92.1
M N1	93.9	96.4	94.9	97.1	95.6
E N1	88.0	92.3	87.7	93.6	90.4
M N2	95.9	97.1	95.7	97.5	96.6
E N2	91.7	94.4	91.2	95.3	93.2

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64/C/15.5

GRASS, DRY MATTER

	N0	N1	N2	N3	Mean
			1ST CUT		
			(±0.98)		
Mean	8.6	14.7	18.7	23.6	16.4
			(±1.39)*		
O	8.6	16.6	20.3	24.8	17.6
C	8.5	12.7	17.0	22.5	15.2
			(±1.39)*		
F	10.1	18.0	22.6	28.2	19.7
T	7.0	11.3	14.8	19.1	13.0

	O	C
F	20.7	18.7
T	14.4	11.6

Mean D.M. %: 18.9

			2ND CUT		
			(±0.66)		
Mean	6.8	10.5	11.1	12.5	10.2
			(±0.93)*		
O	4.5	5.8	7.7	6.7	6.1
C	9.1	15.2	14.6	18.3	14.3
			(±0.93)*		
F	8.7	13.0	16.0	17.3	13.7
T	5.0	7.9	6.3	7.6	6.7

	O	C
F	10.1	17.4
T	2.2	11.2

Mean D.M.%: 29.7

* For use in vertical and interaction comparisons

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64/C/15.6

TOTAL OF 2 CUTS

	N0	N1	N2	N3	Mean
		(±1.07)			
Mean	15.4	25.1	29.8	36.1	26.6
		(±1.51)*			
O	13.2	22.4	28.0	31.4	23.7
C	17.6	27.9	31.6	40.8	29.5
		(±1.51)*			
F	18.8	31.0	38.6	45.5	33.5
T	11.9	19.2	21.0	26.7	19.7

	O	C
F	30.8	36.1
T	16.6	22.8

Mean D.M. %: 24.3

* For use in vertical and interaction comparisons

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64/C/16.1

ONE YEAR LEYS FOR WHEAT

(WAS)

A comparison of different one year leys as a preparation for wheat - Woburn Warren Field North - leys 1964 the first year.

Design: 3 randomised blocks of 18 plots each.

Area of each plot: 0.0212. Area harvested: 1st cut - 0.0101, 2nd cut - 0.0138.

Treatments: All combinations of:-

1. Leys undersown in barley 1963 and cut for hay 1964, with nitrogen as follows:
   Clover: None (C0).
   Ryegrass: None (R0), 1(R2), 2 (R4) cwt N.
   Clover-Ryegrass: None (M0) 1 (M2) cwt N.
   All N as 'Nitro-Chalk', 5/8ths to first cut, 3/8ths to second cut.
2. Potash: None (K0), 1.2 (K1), 2.4 (K2) cwt K20 as muriate of potash, 5/8ths to first cut, 3/8ths to second cut.

NOTE (1): Wheat 1965 will test in addition to the above:

3. Potash at none, 1.2, 2.4 cwt K20
4. 'Nitro-Chalk' at none, 0.5, 1.0 cwt N.

Basal dressing. Barley nurse crop 1963: 3 cwt 21:14:14 combine drilled. Leys: 1.25 cwt superphosphate combine drilled.

Cultivations, etc.: Barley drilled: Apr 13, 1963. Leys undersown in barley, basal dressing applied for leys: May 6, 1963. 1st dressing of N and K applied: Mar 25, 1964. Cut: June 12. 2nd dressing of N and K applied: June 23. Cut 2nd time: Aug 5. Previous crops: Barley 1962 and 1963.

NOTE (2): Plots were sampled at each cut for estimation of dry matter and N and K per cent.

Standard errors per plot. Dry matter:

1st cut:	3.60 or 7.4% (34 d.f.)
2nd cut:	2.46 or 9.5% (34 d.f.)
Total of 2 cuts:	4.70 or 6.3% (34 d.f.)

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64/C/16.2

SUMMARY OF RESULTS

GRASS, DRY MATTER

	C0	R0	R2	R4	M0	M2	Mean
			1ST CUT				
			(±2.08)				(±0.84)
K0	30.4	40.3	55.0	54.1	49.4	60.5	48.3
K1	35.2	42.0	61.1	59.1	50.0	54.8	50.4
K2	35.0	40.1	56.0	53.1	49.2	56.2	48.3
Mean (±1.20)	33.5	40.8	57.4	55.4	49.5	57.2	48.9
			2ND CUT				
			(±1.41)				(±0.58)
K0	25.8	7.1	30.8	36.2	20.0	32.9	25.5
K1	25.9	8.1	31.6	38.9	21.2	32.1	26.3
K2	27.1	6.6	31.1	40.9	18.7	33.3	26.3
Mean (±0.81)	26.3	7.3	31.2	38.6	20.0	32.8	26.0
			TOTAL OF 2 CUTS				
			(±2.71)				(±1.10)
K0	56.2	47.5	85.8	90.2	69.4	93.5	73.7
K1	61.1	50.1	92.7	98.0	71.2	86.9	76.7
K2	62.0	46.6	87.1	94.0	67.9	89.5	74.5
Mean (±1.56)	59.8	48.1	88.5	94.1	69.5	89.9	74.9

Mean D.M. %: 1st cut 24.3
2nd cut 29.6
Total of 2 cuts 26.9

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64/C/17.1

BARLEY AFTER GREEN MANURES

(WAU)

Effects of trefoil and ryegrass green manures, time of ploughing and N - Woburn Road Piece 1964 - barley following early potatoes.

Design: Single replicate of 4 x 2 x 4 in two blocks of 16 plots each, randomisation restricted.

Area of each plot: 0.0212. Area harvested: 0.0141.

Treatments. All combinations of:-

1. Green manures: None (0), trefoil (T), ryegrass (R), ryegrass sown with 0.6 cwt N as 'Nitro-Chalk' (RN).
2. Time of ploughing: Nov 26, 1963 (A), Jan 30, 1964 (S).
3. Nitrogen: None (N0), 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N as 'Nitro-Chalk'.

Basal dressing. Early potatoes: 8 cwt 17:11:22. Green manures: None. Barley: 2.5 cwt 0:20:20 combine drilled.

Cultivations, etc.: Ploughed: Sept 17 - Oct 17, 1962. Basal dressing applied for early potatoes: Apr 11, 1963. Potatoes planted: Apr 19. Earthed up: June 15. Haulm destroyed mechanically: July 23. Lifted: July 24 - Aug 2. Ground chalk applied to plots 1 - 16 at 60 cwt and to plots 17 - 32 at 20 cwt, 'Nitro-Chalk' applied to RN plots: Aug 2. Trefoil sown at 30 lb and ryegrass at 40 lb: Aug 3. A plots ploughed: Nov 26. S plots ploughed: Jan 30, 1964. 'Nitro-Chalk' treatments applied: Feb 25. Seed drilled at 2.75 bushels: Feb 28. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 6. Combine harvested: Aug 21. Varieties: Trefoil - English, ryegrass - English Leafy Italian, early potatoes - Arran Pilot, barley - Maris Badger. Previous crops: Spring wheat 1961, barley 1962.

NOTE: (1) The green manures were sampled just before ploughing for estimates of dry matter and N per acre in roots plus tops.
(2) Yields were adjusted for a linear trend across the blocks and only the adjusted yields are presented.

Standard error per plot.
Barley. Grain 3.64 or 11.5% (7 d.f.)

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64/C/17.2

SUMMARY OF RESULTS

GRAIN

	N0	N1	N2	N3	Mean
		(±1.29)			
Mean	22.4	29.3	35.3	39.8	31.7
		(±2.58)			(±1.29)
O	16.7	20.0	30.2	35.7	25.7
T	27.0	34.8	40.9	44.2	36.7
R	19.8	26.6	30.4	35.3	28.0
RN	26.0	36.0	39.7	43.9	36.4
		(±1.82)			(±0.91)
A	22.3	30.5	34.7	42.5	32.5
S	22.4	28.2	35.9	37.1	30.9

	O	T	R	RN
		(±1.82)		
A	27.7	38.0	28.0	36.3
S	23.6	35.4	28.0	36.5

Mean D.M. %: 84.2

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64/C/18.1

SUGAR BEET AFTER GREEN MANURES

(WAV)

Effects of trefoil and ryegrass green manures and N - Woburn Great Hill 1964, sugar beet following barley.

Design: 2 replicates of 4 x 2 x 4 in 4 blocks of 16 plots each, with restricted randomisation.

Area of each plot: 0.0159. Area harvested: 0.0106.

Treatments: All combinations of:-

1. Green manures undersown: None (O), trefoil (T), ryegrass (R), ryegrass sown with 0.6 cwt N as 'Nitro-Chalk' (RN).
2. Time of ploughing: Nov 28, 1963 (A), Jan 30, 1964 (S).
3. Nitrogen: None (N0), 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt N as 'Nitro-Chalk'.

Basal dressings. Barley: 3 cwt 21:14:14 combine drilled. Green manures: None. Sugar beet: 5 cwt agricultural salt, 0.45 cwt K20 as muriate of potash, 2.5 cwt 0:20:20.

Cultivations, etc.: Ploughed: Nov 12, 1962. Barley drilled at 2.25 bushels: Apr 8, 1963. Trefoil undersown at 30 lb and ryegrass at 40 lb: May 6. Barley combine harvested: Sept 9. 'Nitro-Chalk' applied to RN plots: Oct 11. A plots ploughed: Nov 28. S plots ploughed: Jan 30, 1964. Salt and muriate of potash applied: Feb 4. Basal PK applied: Apr 6. 'Nitro-Chalk' treatments applied: Apr 8. Seed drilled at 5 lb: Apr 14. Singled: May 19 - 27. Lifted: Oct 14. Varieties: Barley - Proctor, trefoil - English, ryegrass - English Leafy Italian, sugar beet - Klein E. Previous crops: Barley 1961, potatoes 1962.

NOTE: The green manures were sampled just before ploughing for estimates of dry matter and N (roots plus tops).

Standard errors per plot:

Roots (washed):	1.122 or 9.3% (29 d.f.)
Total sugar:	4.98 or 10.4% (29 d.f.)
Tops:	0.922 or 14.4% (29 d.f.)

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64/C/18.2

SUMMARY OF RESULTS

	N0	N1	N2	N3	Mean
		ROOTS			
		(±0.281)			
Mean	8.55	12.50	13.82	13.26	12.03
		(±0.561)			(±0.281)
O	8.56	13.14	13.69	13.32	12.18
T	8.88	11.85	14.68	13.51	12.23
R	7.88	12.28	13.07	13.89	11.78
RN	8.86	12.74	13.84	12.29	11.93
		(±0.397)			(±0.198)
A	8.34	12.57	13.89	13.21	12.00
S	8.75	12.44	13.75	13.30	12.06

	O	T	R	RN
		(±0.397)		
A	12.12	12.18	11.93	11.78
S	12.24	12.28	11.63	12.09

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64/C/18.3

	N0	N1	N2	N3	Mean
		SUGAR %			
Mean	20.2	20.4	19.9	18.9	19.8
O	19.8	20.6	20.1	18.8	19.9
T	20.4	20.6	19.7	18.7	19.8
R	20.4	20.2	20.0	19.4	20.0
RN	20.3	20.0	19.9	18.5	19.7
A	20.0	20.5	19.9	18.9	19.8
S	20.4	20.3	19.9	18.8	19.9

	O	T	R	RN
A	19.8	19.8	20.1	19.6
S	19.9	19.9	19.9	19.7

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64/C/18.4

	N0	N1	N2	N3	Mean
		TOTAL SUGAR			
		(±1.24)			
Mean	34.6	51.0	55.1	50.0	47.7
		(±2.49)			(±1.24)
O	34.0	54.2	55.1	50.1	48.3
T	36.3	48.8	57.9	50.5	48.4
R	32.1	49.6	52.2	53.8	46.9
RN	36.0	51.2	55.0	45.7	47.0
		(±1.76)			(±0.88)
A	33.4	51.5	55.3	49.9	47.5
S	35.8	50.5	54.8	50.1	47.8

	O	T	R	RN
		(±1.76)		
A	48.0	48.0	47.8	46.2
S	48.7	48.7	46.1	47.7

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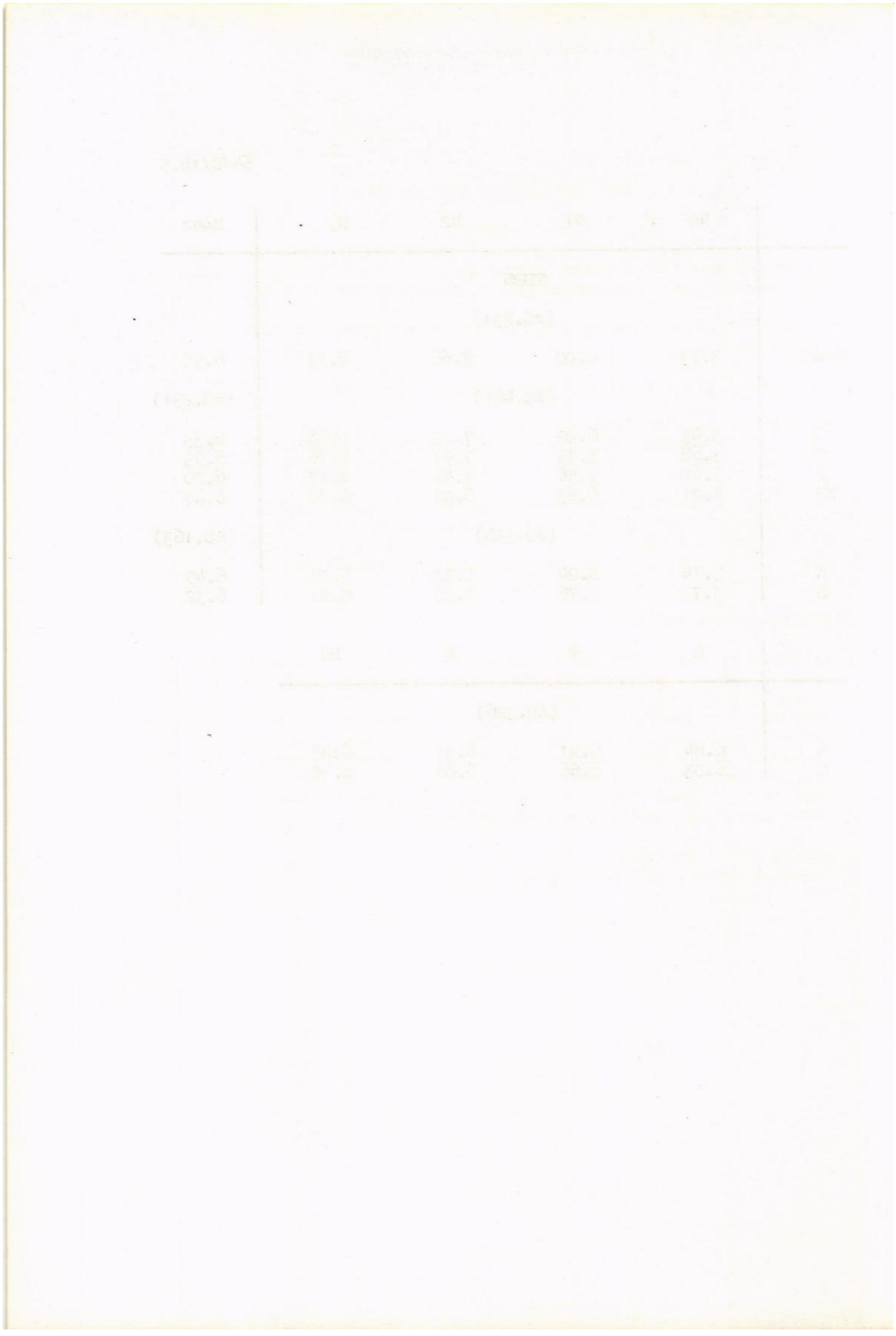
64/C/18.5

	N0	N1	N2	N3	Mean
		TOPS			
		(±0.231)			
Mean	3.73	6.00	7.66	8.15	6.38
		(±0.461)			(±0.231)
O	3.43	6.02	7.03	8.86	6.33
T	3.68	5.79	7.91	8.76	6.53
R	3.60	5.56	7.47	8.17	6.20
RN	4.21	6.63	8.21	6.82	6.47
		(±0.326)			(±0.163)
A	3.74	6.24	7.72	8.09	6.45
S	3.73	5.76	7.59	8.21	6.32

	O	T	R	RN
		(±0.326)		
A	6.64	6.41	6.31	6.43
S	6.03	6.66	6.08	6.50

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64/C/19.1

ROW SPACING AND FERTILISERS

(WBD)

Row spacing and concentrated fertilisers - Woburn Horsepool 1964, the first year. Potatoes 1964 followed by barley 1965.

Design: Two replicates of 4 x 2 x 2 x 2 in 4 blocks of 16 plots each.

Area of each plot: 0.0030. Area harvested: 0.0022.

Treatments: All combinations of:-

1. Levels of NPK (in the proportion 1.0N, 1.0 P_2O_5, 1.5 K_2O) to supply: None (F0), 0.66 (F1), 1.32 (F2), 2.0 (F3) cwt N.
2. Type of fertiliser: Concentrated (C), dilute (D).
3. Time of application: Before (B), after (A) rotary cultivation.
4. Spacing of setts: 14 in. x 14 in.(S14), 14 in. x 28 in.(S28).
5. Also to barley 1965, concentrated NPK fertiliser to supply none, 0.33, 0.66, 1.00 cwt N.

Basal dressing: None.

Cultivations, etc.: Chisel ploughed: Dec 7, 1963. Ploughed: Jan 3, 1964. B fertilisers applied: Apr 29. Rotary cultivated, A fertilisers applied: Apr 30. Potatoes hand planted on flat: May 1. Sprayed with diquat/paraquat (Preeglone Extra at 2 pints in 40 gals): May 15. Sprayed twice with dimethoate at 4.8 fluid oz in 40 gals: June 8 and July 6. Sprayed twice with copper oxychloride fungicide at 2.3 lb Cu in 40 gals: July 3 and 17. Lifted: Sept 14. Variety: King Edward (chitted). Previous crops: Grass 1962, winter wheat 1963.

Standard error per plot.
Total tubers: 0.960 or 5.6% (30 d.f.)

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SUMMARY OF RESULTS

ROW SPACING

TOTAL TUBERS

	F0	F1	F2	F3	Mean
		(±0.240)			
Mean	13.01	16.84	19.05	19.42	17.08
		(±0.340)			(±0.196)
C		16.78	19.52	19.38	18.56
D		16.90	18.58	19.45	18.31
		(±0.340)			(±0.196)
B		16.36	18.58	19.07	18.00
A		17.33	19.52	19.76	18.87
		(±0.340)			(±0.170)
S14	14.20	17.71	20.33	20.14	18.09
S28	11.82	15.97	17.77	18.69	16.06

OMITTING F0

CB	DB	CA	DA
	(±0.277)		
17.83	18.18	19.30	18.44
C S14	D S14	C S28	D S28
	(±0.277)		
19.37	19.41	17.75	17.21
B S14	A S14	B S28	A S28
	(±0.277)		
18.89	19.90	17.11	17.84

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64/C/19.3

ROW SPACING

% WARE

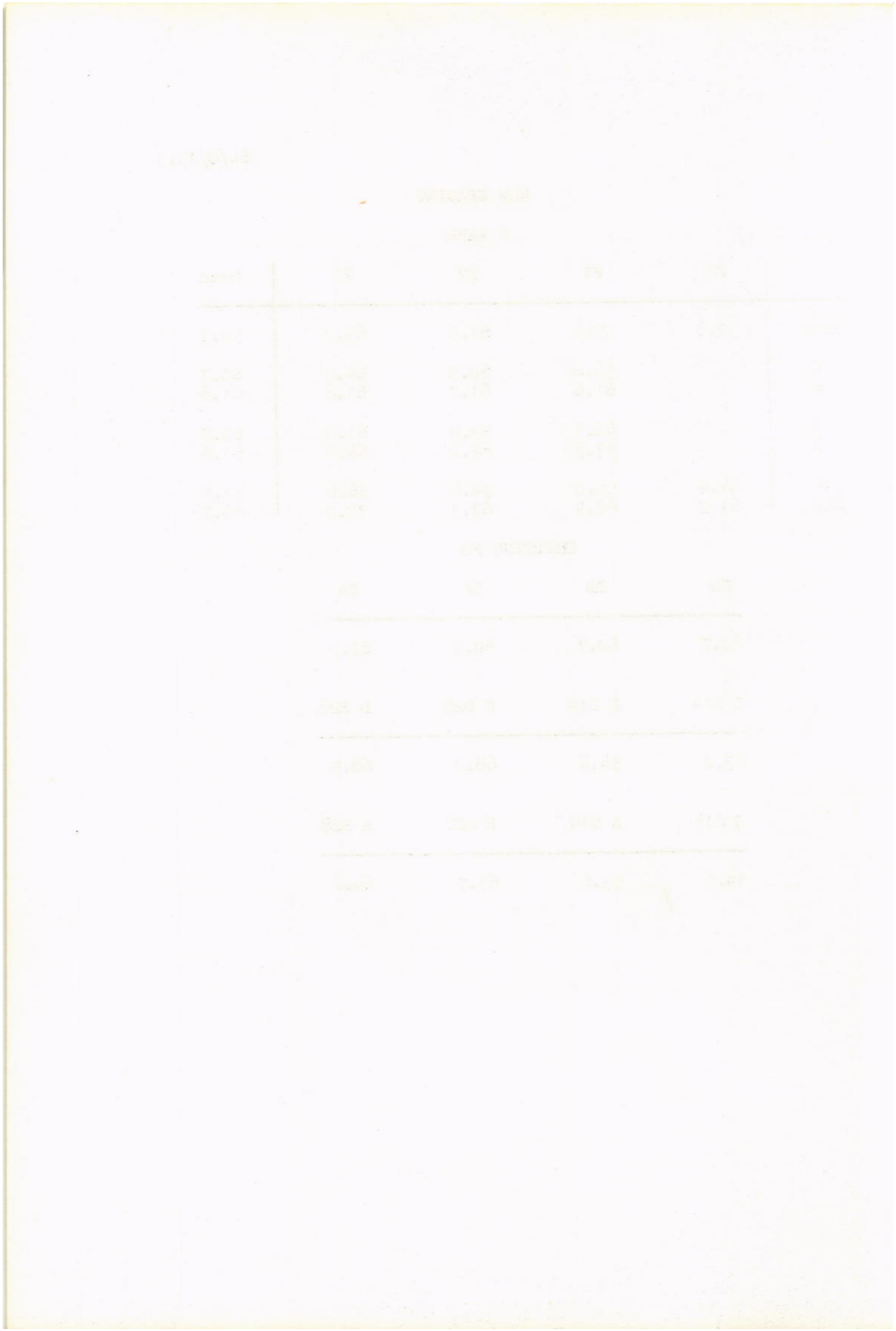
	F0	F1	F2	F3	Mean
Mean	52.8	59.2	61.0	63.3	59.1
C		56.8	60.3	64.9	60.7
D		61.6	61.7	61.6	61.6
B		60.5	59.9	61.8	60.7
A		57.9	62.2	64.8	61.6
S14	44.4	50.0	54.8	56.6	51.4
S28	61.2	68.4	67.3	70.0	66.7

OMITTING F0

CB	DB	CA	DA
60.7	60.7	60.7	62.5
C S14	D S14	C S28	D S28
53.2	54.4	68.2	68.9
B S14	A S14	B S28	A S28
54.0	53.6	67.5	69.6

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64/C/20.1

SOIL STRUCTURE 2

Effects of peat and subsoiling - Woburn Stackyard Field, plot 6 of Continuous Barley site red beet 1963, carrots 1964.

Design: 4 randomised blocks of 5 plots each, with plots split in 1964 for test of P. Two blocks were subsoiled.

Area of each plot: Red beet 1963: 0.0016, carrots 1964: 0.0008.
Area harvested: Red beet 1963: 0.0011, carrots 1964: 0.0006.

Treatments. All combinations of:-

Blocks 1. Subsoiling: None (S0), subsoiled (S1) by hand to depth of 20 inches in 1963.

Whole plots 2. Peat: None (0) - 2 plots per block, 62.5 cwt peat dry matter, applied to top 2 inches of soil alone (Sb), or with peat dug in to a depth of 8 inches, either at the same rate (Dg1) or at twice the rate (Dg2).

Sub plots 3. P test (1964 only): None (P0), 0.6 cwt (P1) P_2O_5 as triple superphosphate.

Basal dressings: Monoammonium phosphate, potassium nitrate and magnesium sulphate to supply the following:-

Red beet 1963: 200 lb N, 250 lb K and 500 lb Mg, all applied before digging except 82 lb N, applied as ammonium nitrate, half before and half after digging.

Carrots 1964: 100 lb N, 75 lb P, 200 lb K and 50 lb Mg. All Mg and four fifths NPK were dug in. The remaining NPK was applied to seedbed.

Cultivations, etc.:

Red beet 1963: Ground chalk applied at 30 cwt, basal dressings and half Dg2 peat applied, all plots rotary cultivated, remainder of Dg2 peat and all Dg1 applied, all plots rotary cultivated second time: Apr 18, 1964. Plots dug, appropriate blocks subsoiled, ground chalk applied at 10 cwt: Apr 19. Sb peat applied and pricked in: Apr 23. Seedbed N applied, seed drilled at 15 lb: May 15. Sprayed with DDT at 0.6 lb in 20 gals: June 7. Singled: July 2. Sprayed with a mixture of menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals: July 31. Lifted: Aug 8. Variety: Detroit Globe.

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Carrots 1964: Dg peat and fertilisers applied, plots dug: Mar 6, 1964. Sb peat and fertilisers applied and worked in: Apr 23. Seed drilled at 7 lb: Apr 27. Sprayed with DDT at 0.6 lb in 20 gals: May 20. Singled: June 4. Sprayed 5 times with a mixture of menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals : June 25, July 14, 21 and 28, Aug 7. Lifted: Sept 2. Variety: Autumn King Red Cored.

NOTE: Soil samples were taken for PK analysis and crop samples for estimation of dry matter and chemical analysis.

Standard errors per plot.

Red beet 1963		
Roots:		0.608 or 9.1% (8 d.f.)
Tops:		0.376 or 8.6% (8 d.f.)
Roots and tops:		0.974 or 8.8% (8 d.f.)
Carrots 1964		
Roots:	Whole plot:	0.563 or 3.5% (8 d.f.)
	Sub plot:	0.915 or 5.6% (10 d.f.)
Tops:	Whole plot:	0.286 or 5.2% (8 d.f.)
	Sub plot:	0.512 or 9.4% (10 d.f.)
Roots and tops:	Whole plot:	0.800 or 3.7% (8 d.f.)
	Sub plot:	1.385 or 6.4% (10 d.f.)

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64/C/20.3

SUMMARY OF RESULTS

RED BEET 1963

	0	Sb	Sb+Dg1	Sb+Dg2	Mean
			ROOTS		
	(±0.304)*		(±0.430)*		
S0	5.63	7.43	6.66	7.49	6.57
S1	5.65	7.37	7.63	7.56	6.77
Mean	5.64 (±0.215)	7.40	7.14 (±0.304)	7.52	6.67
			TOPS		
	(±0.188)*		(±0.266)*		
S0	3.88	4.73	4.05	4.63	4.24
S1	4.04	4.80	4.57	4.88	4.47
Mean	3.96 (±0.133)	4.77	4.31 (±0.188)	4.76	4.35
			ROOTS AND TOPS		
	(±0.487)*		(±0.689)*		
S0	9.52	12.17	10.71	12.12	10.80
S1	9.69	12.17	12.20	12.45	11.24
Mean	9.60 (±0.344)	12.17	11.46 (±0.487)	12.28	11.02

* For use in horizontal and interaction comparisons only

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64/C/20.4

CARROTS 1964

	0	Sb	Sb+Dg1	Sb+Dg2	P0	P1	Mean
			ROOTS				
	(±0.199)		(±0.282)				
Mean	15.58	15.97	16.91	17.06			16.22
	(±0.282)*		(±0.398)*		(±0.289)*		
S0	15.09	15.68	16.92	17.09	15.97	15.97	15.97
S1	16.06	16.26	16.89	17.04	16.20	16.73	16.47
	(1)&(2)		(3)&(4)				(±0.205)
P0	15.47	15.72	16.55	17.21			16.09
P1	15.68	16.21	17.26	16.92			16.35
			TOPS				
	(±0.101)		(±0.143)				
Mean	5.50	5.53	5.48	5.37			5.47
	(±0.143)*		(±0.202)*		(±0.162)*		
S0	5.34	5.30	5.35	5.20	5.29	5.32	5.30
S1	5.65	5.76	5.61	5.54	5.57	5.72	5.64
	(1)&(2)		(3)&(4)				(±0.115)
P0	5.40	5.59	5.30	5.44			5.43
P1	5.58	5.47	5.66	5.30			5.52
			ROOTS AND TOPS				
	(±0.283)		(±0.400)				
Mean	21.08	21.50	22.39	22.43			21.69
	(±0.400)*		(±0.566)*		(±0.438)*		
S0	20.42	20.97	22.26	22.29	21.26	21.29	21.28
S1	21.72	22.02	22.51	22.58	21.77	22.45	22.11
	(1)&(2)		(3)&(4)				(±0.310)
P0	20.88	21.31	21.85	22.65			21.52
P1	21.26	21.68	22.92	22.21			21.87

	ROOTS	TOPS	ROOTS & TOPS	
(1)	(±0.323)	(±0.181)	(±0.490)	For use in vertical and interaction comparisons
(3)	(±0.457)	(±0.256)	(±0.692)	
(2)	(±0.303)	(±0.163)	(±0.447)	For use in horizontal and diagonal comparisons
(4)	(±0.429)	(±0.231)	(±0.632)	

* For use in horizontal and interaction comparisons

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64/C/21.1

SOIL STRUCTURE 4

The effects of Krilium and peat - Woburn Stackyard Field, plot 6 of Continuous Barley site, red beet 1964.

Design: 3 randomised blocks of 4 plots each.

Area of each plot: 0.0006. Area harvested: 0.0005.

Treatments. All combinations of:-

1. Krilium: None (0), Krilium CRD 189 at 10 cwt active ingredient (Kr).
2. Peat: None (0), 90 cwt peat dry matter (Pt). The Krilium and peat were applied to the seedbed and worked into the top 2 inches.

Basal dressing: Monoammonium phosphate, potassium nitrate, ammonium nitrate and magnesium sulphate to supply 200 lb N, 75 lb P, 250 lb K, 50 lb Mg. All fertilisers were dug in except one fifth N which was applied to the seedbed and worked in.

Cultivations, etc.: Ground chalk applied at 2 tons, plots rotavated, fertilisers applied, plots dug: Apr 13, 1964. Krilium and peat applied, all plots worked with drags: Apr 29. Ground chalk applied at 1 ton and one fifth N applied, seed drilled at 30 lb: May 1. Sprayed with DDT at 0.6 lb in 20 gals: May 20. Singled: June 15. Sprayed 3 times with a mixture of menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals: June 25, July 14 and 21. Lifted: Aug 5. Variety: Detroit Globe.

NOTE: Crop samples were taken for estimation of dry matter and chemical analysis.

Standard errors per plot.

Roots:	0.711 or 5.1% (6 d.f.)
Tops:	0.465 or 6.5% (6 d.f.)
Roots and Tops:	1.160 or 5.5% (6 d.f.)

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64/C/21.2

SUMMARY OF RESULTS

	O	Pt	Mean
	ROOTS		
	(±0.410)		(±0.290)
O	12.64	13.04	12.84
Kr	13.60	16.12	14.86
Mean (±0.290)	13.12	14.58	13.85
	TOPS		
	(±0.269)		(±0.190)
O	6.89	6.64	6.77
Kr	7.05	7.94	7.50
Mean (±0.190)	6.97	7.29	7.13
	ROOTS AND TOPS		
	(±0.670)		(±0.474)
O	19.52	19.69	19.60
Kr	20.65	24.06	22.35
Mean (±0.474)	20.08	21.88	20.98

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64/Da/1.1

WINTER WHEAT

(RW 101 and WW 101)

N-serve - Rothamsted (R) Great Knott II and Woburn (W) Lansome Field 1964.

Design (each field): 3 randomised blocks of 14 plots each.

Area of each plot:	Area harvested:
Great Knott II (R): 0.0161	0.0133
Lansome Field (W): 0.0116	0.0077

Treatments: No nitrogen (0) (2 plots per block) and all combinations of:-

1. Materials and time of application: Sulphate of ammonia treated with 'N-serve' at none (A), 1% (AS1), 2% (AS2) of N applied, placement drilled in autumn (P)
   Sulphate of ammonia treated with N-serve at none (A) or 1% (AS1) of N, broadcast in spring (B)
   Calcium nitrate broadcast in spring (CB).

2. Levels of N: (R) 50 (1) and 100 (2) lb per acre
   (W) 75 (1) and 150 (2) lb per acre.

Basal dressing: Great Knott II (R): 2.5 cwt 0:20:20 broadcast
Lansome Field (W): 3.0 cwt 0:20:20 broadcast.

Cultivations, etc.:

Great Knott II (R): Chisel ploughed 3 times: Oct 24, 1963. Seed drilled, basal dressing applied: Oct 28. Spring nitrogen applied: Apr 27, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 30. Combine harvested: Aug 27. Variety: Cappelle. Previous crops: Spring beans 1962, potatoes 1963.

Lansome Field (W): Ploughed: Oct 7, 1963. Seed drilled, basal dressing applied: Oct 17. Spring nitrogen applied: Apr 24, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 30. Combine harvested: Aug 29. Variety: Cappelle. Previous crops: Sugar beet 1962, carrots 1963.

NOTE: Plant samples were taken during growth of the crop in order to measure N uptake.

Standard errors per plot. Grain:
Great Knott II (R): 2.660 or 5.1% (27 d.f.)
Lansome Field (W): 1.536 or 4.1% (27 d.f.)

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64/Da/1.2

SUMMARY OF RESULTS

GRAIN

	ROTHAMSTED		WOBURN	
	Mean	Increase	Mean	Increase
0	45.8 (±1.09)	(±1.88)	16.9 (±0.63)	(±1.09)
A1 P	51.0	+5.2	25.7	+8.8
A1 S1 P	50.8	+5.0	28.4	+11.5
A1 S2 P	55.0	+9.2	299.9	+13.0
A2 P	53.7	+7.9	37.5	+20.6
A2 S1 P	53.9	+8.1	43.3	+26.4
A2 S2 P	55.4 (±1.54)	+9.6	42.3 (±0.89)	+25.4
A1 B	52.3	+6.5	38.2	+21.3
A1 S1 B	52.4	+6.6	36.7	+19.8
C1 B	52.4	+6.6	45.7	+28.8
A2 B	56.0	+10.2	54.0	+37.1
A2 S1 B	56.9	+11.1	51.5	+34.6
C2 B	55.6	+9.8	51.9	+35.0
Mean	52.6		37.1	
Mean D.M. %:	86.9		86.9	

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64/Da/2.1

WINTER WHEAT

(RW 401 and WW 201)

Row spacing, seed rates and N - Rothamsted (R) Great Knott II and Woburn (W) Horsepool 1964.

Design (each field): 4 randomised blocks of 8 plots each, plots being divided into 3 for the application of N.

Area of each sub plot: 0.0045.

Treatments. All combinations of:-
Whole plot. Row spacing: Seed and NPK* broadcast (B), seed drilled at 4 inches between rows, NPK broadcast (C), seed drilled, 7 inch rows, NPK broadcast (W), seed drilled, 7 inch rows, NPK combine drilled (W*).
Seed rates: 2 (L), 3.5 (H) bushels.
Sub plots. Nitrogen: 0.4 (N1), 0.8 (N2), 1.2 (N3) cwt N as 'Nitro-Chalk' broadcast in spring.

* (6:15:15) to all plots - rate 311 lb.

Cultivations, etc.:
Great Knott II (R). Chisel ploughed 3 times: Oct 24 - 26, 1963. Seed sown, NPK compound applied: Oct 30. 'Nitro-Chalk' applied: Apr 11, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 30. Combine harvested: Aug 27. Variety: Cappelle. Previous crops: Spring beans 1962, potatoes 1963.
Horsepool (W). Ploughed: Oct 31, 1963. Seed sown, NPK compound applied: Nov 13. 'Nitro-Chalk' applied: Mar 26, 1964. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 30. Combine harvested: Aug 28. Variety: Cappelle. Previous crops: Kale 1962, potatoes 1963.

Standard errors per plot. Grain:

Great Knott II (R)	Whole plot:	2.41 or 4.7% (21 d.f.)
	Sub plot:	3.70 or 7.3% (48 d.f.)
Horsepool (W)	Whole plot:	2.17 or 4.3% (21 d.f.)
	Sub plot:	3.32 or 6.6% (46 d.f.)

NOTES: (1) Horsepool (W). Because of a breakdown during combine harvesting the yields from 2 sub plots 215a and 215b (treatments W*LN2 and W*LN3) were lost. Estimated values were used in the analysis.
(2) Emergence counts were made on Dec 11, 1963 on Great Knott II (R) and on Feb 5, 1964 on Horsepool (W).

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64/Da/2.2

SUMMARY OF RESULTS

GRAIN

ROTHAMSTED

	B	C	W	W*	Mean
		(±1.20)			(±0.60)
L	52.0	50.3	50.0	51.0	50.8
H	49.7	51.2	52.1	49.9	50.7
		(1) and (2)			(±0.65)
N1	48.4	48.1	47.7	48.6	48.2
N2	51.5	52.5	51.8	51.0	51.7
N3	52.6	51.7	53.7	51.7	52.4
Mean (±0.85)	50.9	50.7	51.1	50.4	50.8

	L	H
	(3) and (4)	
N1	48.3	48.1
N2	50.7	52.7
N3	53.6	51.3

Mean D.M. %: 87.3

(1) ±1.85 (3) ±1.31. For use in vertical and interaction comparisons.

(2) ±1.93 (4) ±1.37. For use in horizontal and diagonal comparisons.

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64/Da/2.3

GRAIN

WOBURN

	B	C	W	W*	Mean
		(±1.09)			(±0.54)
L	49.7	53.0	49.7	50.8	50.8
H	46.9	52.0	50.0	50.3	49.8
		(1) and (2)			(±0.59)
N1	49.4	55.7	51.6	52.7	52.3
N2	49.1	51.7	49.6	49.5	50.0
N3	46.3	50.0	48.2	49.6	48.5
Mean (±0.77)	48.3	52.5	49.8	50.6	50.3

	L	H
	(3) and (4)	
N1	53.0	51.7
N2	50.1	49.9
N3	49.3	47.8

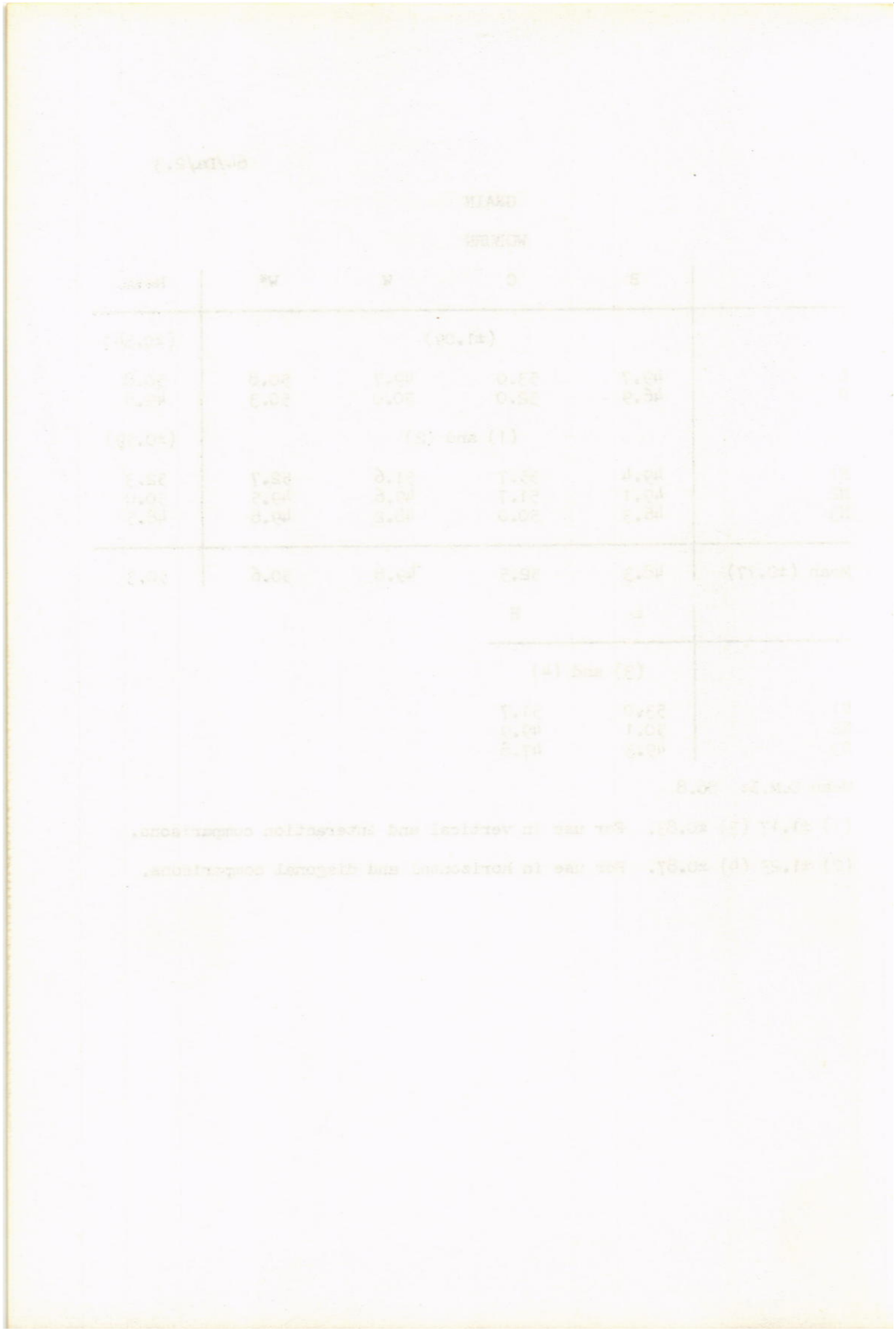
Mean D.M.%: 86.8

(1) ±1.17 (3) ±0.83. For use in vertical and interaction comparisons.

(2) ±1.23 (4) ±0.87. For use in horizontal and diagonal comparisons.

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64/Da/3.1

SPRING WHEAT

(WW 301)

'Scorch' study - Woburn Butt Close 1964.

Design: 2 replicates of 2 x 2 x 2 x 3 in 4 blocks of 12 plots each.

Area of each plot: 0.0032. Area harvested: 0.0014.

Treatments. All combinations of:-

1. Fumigant: None (F0), sprayed twice with formalin (F) on Dec 16, 1963 and Feb 21, 1964. 266 gals formalin (38% formaldehyde) in 3.700 gals water, on each occasion.
2. Fungicide: None (S0), sprayed with nabam 3 times (S) - at 10 lb nabam in seedbed, at 5 lb on May 7 (3-4 leaf stage), at 5 lb in late May (at ground cover stage). Each application in 100 gals.
3. Irrigation: None (W0), irrigated (W).
4. Nitrogen: 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt N as 'Nitro-Chalk', applied half in seedbed, half on May 6.

Basal dressing: 2.5 cwt 0:20:20.

Cultivations, etc.: Ploughed: Oct 2, 1963. Seedbed N and all PK applied: Feb 20, 1964. Seed sown at 2.5 bushels: Mar 26. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 50 gals): May 14. W plots irrigated 10 times - 0.25 in: May 19, 0.75 in: May 26, 0.17 in: June 4, 0.375 in: June 15, 0.50 in: June 30, 0.25 in: July 3, 0.375 in: July 6, 0.5 in: July 14, 0.75 in: July 20, 0.75 in: July 28. Harvested: Aug 25. Variety: Jufy I. Previous crops: Spring beans 1962, winter wheat 1963.

NOTE: Green crop samples were taken at fortnightly intervals from early June to mid-July.

Standard error per plot.
Grain: 2.66 or 11.5% (22 d.f.)

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64/Da/3.2

SUMMARY OF RESULTS

GRAIN

	F0	F	S0	S	W0	W	Mean
	(±0.77)						
S0	14.7	30.9					
S	16.1	30.7					
	(±0.77)		(±0.77)				
W0	13.0	27.3	20.4	19.9			
W	17.8	34.3	25.2	26.9			
	(±0.94)		(±0.94)		(±0.94)		(±0.66)
N1	10.3	28.1	18.7	19.7	17.7	20.8	19.2
N2	16.7	33.1	25.3	24.5	22.1	27.8	24.9
N3	19.1	31.1	24.3	26.0	20.7	29.6	25.1
Mean (±0.54)	15.4	30.8	22.8	23.4	20.1	26.0	23.1

Mean D.M. %: 88.5

STRAW

S0	24.1	45.4					
S	26.5	44.1					
W0	22.7	41.3	31.8	32.1			
W	27.9	48.3	37.7	38.5			
N1	16.0	39.8	27.1	28.6	26.0	29.7	27.9
N2	26.6	46.5	36.8	36.3	34.1	39.0	36.6
N3	33.3	48.0	40.4	40.9	35.7	45.6	40.7
Mean	25.3	44.8	34.8	35.3	32.0	38.1	35.0

Mean D.M. %: 89.9

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64/Da/4.1

SPRING WHEAT

(RW 501)

Effects of CCC* - Pastures 1964.

Design: 4 randomised blocks of 9 plots each.

Area of each plot: 0.0067. Area harvested: 0.0008.

Treatments: All combinations of:-
1. CCC* in spray at 67 gals: None (0), 2.5 lb (S), 5.0 lb (D).
2. Nitrogen: 0.25 (N1), 0.75 (N3), 1.25 (N5) cwt N as 'Nitro-Chalk'.

* 2-chloroethyltrimethylammonium chloride - a dwarfing compound.

Basal dressing: 1.5 cwt compound 0:20:20 combine drilled.

Cultivations, etc.: Ploughed: Feb 27, 1964. Seed drilled at 4.5 bushels: Mar 13. 'Nitro-Chalk' applied: Mar 31. CCC sprays applied: May 13. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 15. Yields estimated by sampling: Aug 24. Variety: Phoebus. Previous crops: 7 year grass and clover ley.

NOTE: Samples were taken for growth analysis at 5 leaf stage, then 3 weeks later, and at ear emergence, and at harvest. Grain yields were estimated by sampling.

Standard error per plot.
Grain: 2.79 or 6.8% (24 d.f.)

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64/Da/4.2

SUMMARY OF RESULTS

	N1	N3	N5	Mean
		GRAIN		
		(±1.39)		(±0.80)
O	35.5	40.5	43.2	39.7
S	36.6	43.2	45.4	41.8
D	37.3	44.7	44.5	42.1
Mean (±0.80)	36.5	42.8	44.4	41.2
		STRAW		
O	39.7	50.6	53.2	47.8
S	30.1	39.8	45.5	38.5
D	31.6	43.9	45.6	40.4
Mean	33.8	44.8	48.1	42.2

Mean D.M. %: Grain 88.4

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64/Da/5.1

SPRING WHEAT

(RW 601)

Dates of sowing and N - Pastures 1964.

Design: 6 x 6 Latin square.

Area of each plot: 0.0145. Area harvested: 0.0008.

Treatments: All combinations of:-
1. Sowing dates: Mar 11, 1964 (E), Apr 2 (M), Apr 28 (L).
2. Levels of nitrogen: None (0), 0.6 (N) N as 'Nitro-Chalk' in seedbed.

Basal dressing: 1.5 cwt 0:20:20 combine drilled.

Cultivations, etc.: Ploughed: Feb 27, 1963. 'Nitro-Chalk' applied: For 1st sowing - Mar 31, 1964, for 2nd sowing - Apr 3, for 3rd sowing - Apr 27. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): 1st sowing - May 15, 2nd sowing - May 29, 3rd sowing - June 10 (all at 3 bushels). Yields estimated by sampling: Aug 27. Variety: Opal. Previous crop: 7 year ley.

NOTE: Samples for crop growth and yield were taken at fortnightly intervals from ear emergence to harvest.

Standard error per plot.
Grain: 3.61 or 10.3% (20 d.f.)

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64/Da/5.2

SUMMARY OF RESULTS

GRAIN

	E	M	L	Mean
		(±1.47)		(±0.85)
0	35.4	34.0	28.4	32.6
N	41.6	40.4	29.6	37.2
Mean (±1.04)	38.5	37.2	29.0	34.9

Mean D.M. %: 89.3

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64/Da/6.1

WHEAT

(RW 301)

Varieties and nitrogen - Claycroft 1964.

Design: 4 randomised blocks of 21 plots each, blocks being divided into 2 sub-blocks each, one of 12 winter and one of 9 spring wheat plots.

Area of each plot: 0.0192. Area harvested: 0.0129.

Treatments. All combinations of:-

1. Varieties: Winter wheat: Cappelle (Ca), Prestige (Pr), Rothwell Perdix (Rp), Squarehead's Master 13/4 (Sq).
   Spring wheat: Jufy I (Ju), Opal (Op), Prestige (Pr).
2. Nitrogen: 0.5 (N1), 0.75 (N2), 1.0 (N3) cwt N broadcast in spring.

Basal dressing (combine drilled): 280 lb compound fertiliser (6: 15: 15) to winter wheat, 210 lb compound fertiliser (0: 20: 20) to spring wheat.

Cultivations, etc.: Ploughed: Nov 22 - Dec 4, 1963. Winter wheat drilled at 3 bushels: Dec 10. Spring wheat drilled at 3 bushels: Mar 11, 1964. 'Nitro-Chalk' applied: Spring wheat - Apr 1, Winter wheat - Apr 25. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gallons): May 9. Combine harvested: Aug 28. Previous crops: Winter and spring wheat 1962, spring beans 1963.

NOTE: One plot of spring wheat (Ju N2) was affected by bird damage at germination - an estimated value was used in the analysis.

Standard errors per plot. Grain:
Winter wheat: 2.87 or 6.3% (33 d.f.)
Spring wheat: 1.94 or 5.2% (23 d.f.)

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SUMMARY OF RESULTS

GRAIN

WINTER WHEAT

	Ca	Pr	Rp	Sq	Mean
		(±1.44)			(±0.72)
N1	48.7	41.6	56.6	38.5	46.4
N2	47.7	42.3	60.2	35.4	46.4
N3	48.0	39.5	58.8	33.6	45.0
Mean (±0.83)	48.2	41.1	58.5	35.8	45.9

Mean D.M. %: 86.1

SPRING WHEAT

	Ju	Op	Pr	Mean
		(±0.97)		(±0.56)
N1	39.3	45.5	30.8	38.5
N2	35.6	43.2	29.9	36.2
N3	35.4	43.2	31.0	36.6
Mean (±0.56)	36.8	44.0	30.6	37.1

Mean D.M. %: 85.9

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64/Db/1.1

BARLEY

(RB 101 and WB 101)

Varieties and N - Rothamsted (R) Great Knott III and Woburn (W) Butt Close 1964.

Design: 4 randomised blocks of 7 plots each, plots being split into 3 for application of N.

Area of each sub-plot:		Area harvested:
Great Knott III (R):	0.0096	0.0064
Butt Close (W):	0.0112.	-

Treatments. All combinations of:-

1. Varieties: Sown at 2.75 bushels: Plumage Archer (A), Maris Badger (B), Cambrinus (C), Europa (E), Impala (I), Proctor (P), Sown at 2.25 bushels: Proctor (PL).
2. Nitrogen: 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N as 'Nitro-Chalk'.

Basal dressing: 2 cwt (0:20:20) combine drilled.

Cultivations, etc.:

Great Knott III (R). Ploughed twice: Sept 26 - Nov 26, 1963 and Jan 6, 1964. Seed drilled: Mar 9. 'Nitro-Chalk' applied: Mar 26. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 14. Combine harvested: Aug 20. Previous crops: Potatoes 1962, winter wheat 1963.

Butt Close (W). Ploughed twice: Oct 2, 1963 and Jan 6, 1964. 'Nitro-Chalk' applied: Feb 27. Seed drilled: Feb 28. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 6. Combine harvested: Aug 27. Previous crops: Spring beans and carrots 1962, winter wheat 1963.

NOTE: In the experiment on Butt Close (W) varieties C, E and I (only) showed severe yellowing. Later all varieties grew badly from unknown causes and no yields were taken.

Standard errors per plot. Grain:

Great Knott III (R):	Whole plot:	0.90 or 2.2% (18 d.f.)
	Sub plot:	3.13 or 7.6% (42 d.f.)

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64/Db/1.2

SUMMARY OF RESULTS

Great Knott III (R)

GRAIN

	N1	N2	N3	Mean
		(1) and (2)		(±0.29)
A	28.3	32.3	39.5	33.4
B	44.1	48.2	44.6	45.6
C	39.8	42.6	46.4	42.9
E	37.7	37.6	39.1	38.1
I	42.4	49.2	49.2	46.9
P	34.8	42.8	44.1	40.6
PL	37.7	43.6	42.3	41.2
Mean (±0.59)	37.8	42.3	43.6	41.2

Mean D.M. %: 83.3

(1) ±1.57 For use in horizontal and interaction comparisons
(2) ±1.36 For use in vertical and diagonal comparisons

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64/Db/2.1

BARLEY

(RB 201 and WB 201)

Row spacing, seed rates and N - Rothamsted (R) Great Knott III and Woburn (W) Butt Close 1964.

Design (each field): 4 randomised blocks of 8 plots each, plots being split into 3 for application of N.

Area of each sub plot: 0.0056 acres.

Treatments: All combinations of:-
Whole plots. (1) Row spacing: Seed and PK* broadcast (B): seed drilled, 4 inches between rows, PK broadcast (C): seed drilled, 7 inch rows, PK broadcast (W): seed drilled, 7 inch rows, PK combine drilled (W*).
(2) Seed rates: 2 (L), 4 (H) bushel.
Sub plots. (3) Nitrogen: 0.4 (N1): 0.7 (N2): 1.0 (N3) cwt N as 'Nitro-Chalk', broadcast.

* (0:20:20) to all plots - rate 2 cwt.

Cultivations, etc.:
Great Knott III (R): Ploughed twice: Sept 26 - Nov 26, 1963 and Jan 6, 1964. Seed sown: Mar 12. 'Nitro-Chalk' and broadcast PK applied: Plots 201-208 - Mar 18, remaining plots - Mar 26. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 14. Combine harvested: Aug 21. Variety: Maris Badger. Previous crops: Potatoes 1962, winter wheat 1963.
Butt Close (W): Ploughed twice: Oct 2, 1963 and Jan 6, 1964. 'Nitro-Chalk' and broadcast PK applied: Feb 26. Seed sown: Mar 11. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 6. Combine harvested: Aug 25. Variety: Maris Badger. Previous crops: Spring beans and carrots 1962, winter wheat 1963.

NOTES (1). Great Knott III (R): There was a drill failure on all sub plots of plot RB 205 (Treatment W*L). Estimated values were used in the analysis.
(2). Butt Close (W): Two blocks (plots WB 209 - 216 and 225 - 232) were abandoned because of poor stands and much weed growth.

Standard errors per plot. Grain:

Great Knott III (R)	Whole plot:	2.20 or 4.4% (20 d.f.)
	Sub plot:	3.00 or 6.0% (46 d.f.)
Butt Close (W)	Whole plot:	2.23 or 7.5% (7 d.f.)
	Sub plot:	4.52 or 15.1% (16 d.f.)

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64/Db/2.2

SUMMARY OF RESULTS

GRAIN

ROTHAMSTED

	B	C	W	W*	Mean
		(±1.10)			(±0.55)
L	52.1	50.8	48.8	48.6	50.1
H	52.5	50.3	46.0	48.2	49.3
		(1) and (2)			(±0.53)
N1	48.4	45.7	42.8	44.3	45.3
N2	54.2	51.0	48.5	49.6	50.8
N3	54.3	54.9	51.0	51.3	52.9
Mean (±0.78)	52.3	50.5	47.4	48.4	49.7

	L	H
	(3) and (4)	
N1	45.3	45.2
N2	51.5	50.2
N3	53.3	52.4

Mean D.M. %: 85.9

(1) ±1.06 (3) ±0.75. For use in vertical and interaction comparisons.

(2) ±1.16 (4) ±0.82. For use in horizontal and diagonal comparisons.

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64/Db/2.3

GRAIN

WOBURN

	B	C	W	W*	Mean
		(±1.58)			(±0.79)
L	26.2	30.1	29.9	33.0	29.8
H	30.8	29.7	29.2	30.4	30.0
		(1) and (2)			(±1.13)
N1	20.0	22.7	19.3	21.9	21.0
N2	29.2	30.8	31.5	29.8	30.3
N3	36.3	36.2	37.9	43.5	38.5
Mean (±1.11)	28.5	29.9	29.6	31.7	29.9

	L	H
	(3) and (4)	
N1	20.8	21.2
N2	30.0	30.6
N3	38.6	38.3

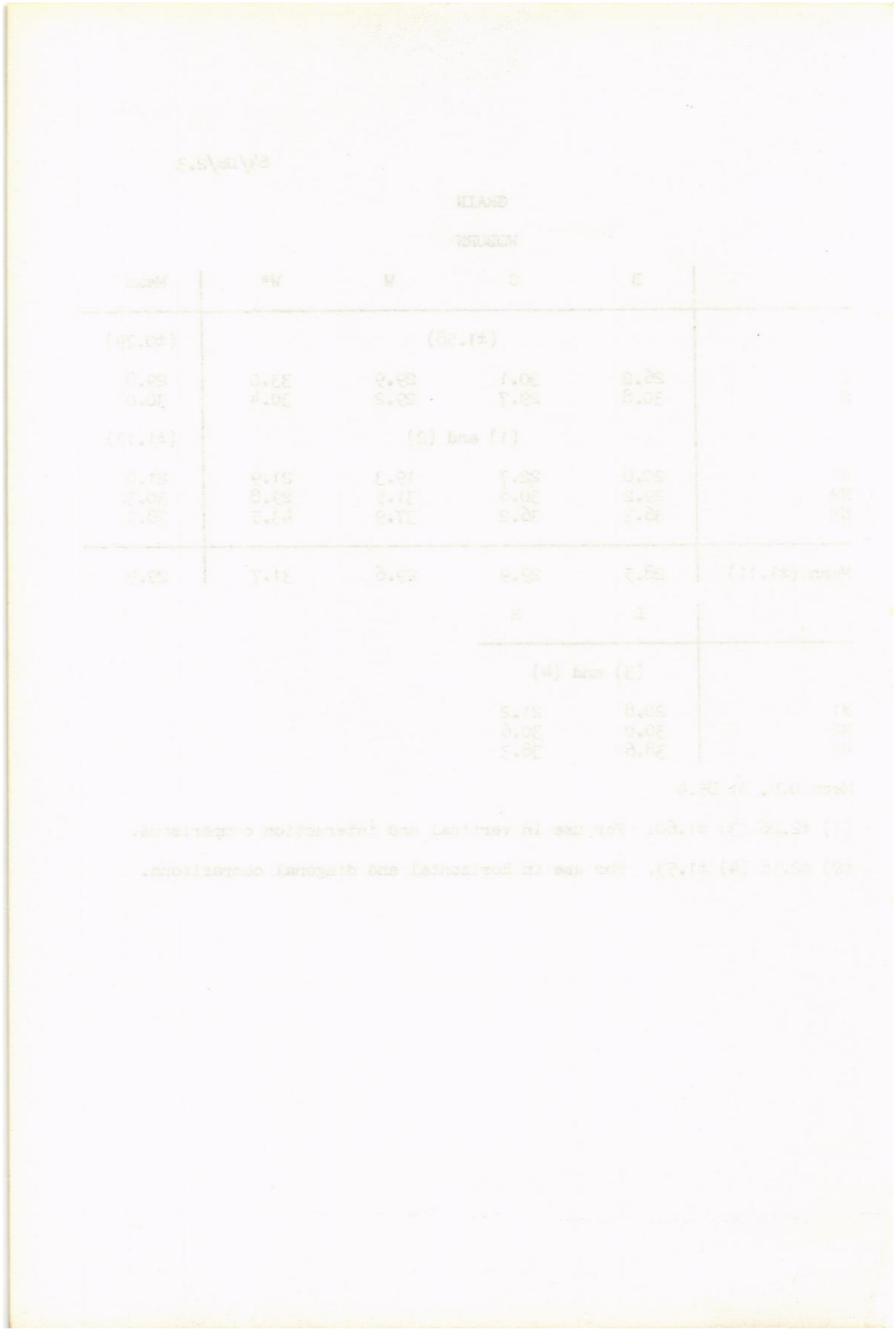
Mean D.M. %: 85.4

(1) ±2.26 (3) ±1.60. For use in vertical and interaction comparisons.

(2) ±2.16 (4) ±1.53. For use in horizontal and diagonal comparisons.

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64/Db/3

BARLEY

(RB 301)

The effect of insecticides on thrips, aphids and the spread of virus - Long Hoos V 1964.

Design: 6 randomised blocks of 4 plots each.

Area of each plot: 0.0212. Area harvested: 0.0141.

Treatments: Dimethoate spray: None (0), 4* early applications (E), 4* late applications (L), 8* applications (EL). Rate of application: 16 fluid oz of Rogor 40 in 40 gals.

*Intended number. Actually treatments E and L received 2 applications each and EL four.

Basal dressing: 3 cwt 20:10:10 combine drilled.

Cultivations, etc.: Ploughed: Oct 21, 1963. Seed drilled at 2 bushels: Feb 14, 1964. E and EL plots sprayed: May 6 and 28. EL and L plots sprayed: June 17, July 2. Combine harvested: Aug 11. Variety: Proctor. Previous crops: Potatoes 1962, winter and spring wheat 1963.

NOTE. Plant and shoot establishment counts were made on Apr 2 and 30. Water traps were used for 6 weeks early in the season and aphid and thrips counts made from May 5 at about weekly intervals until July 28.

Standard error per plot.
Grain: 2.81 or 9.0% (15 d.f.)

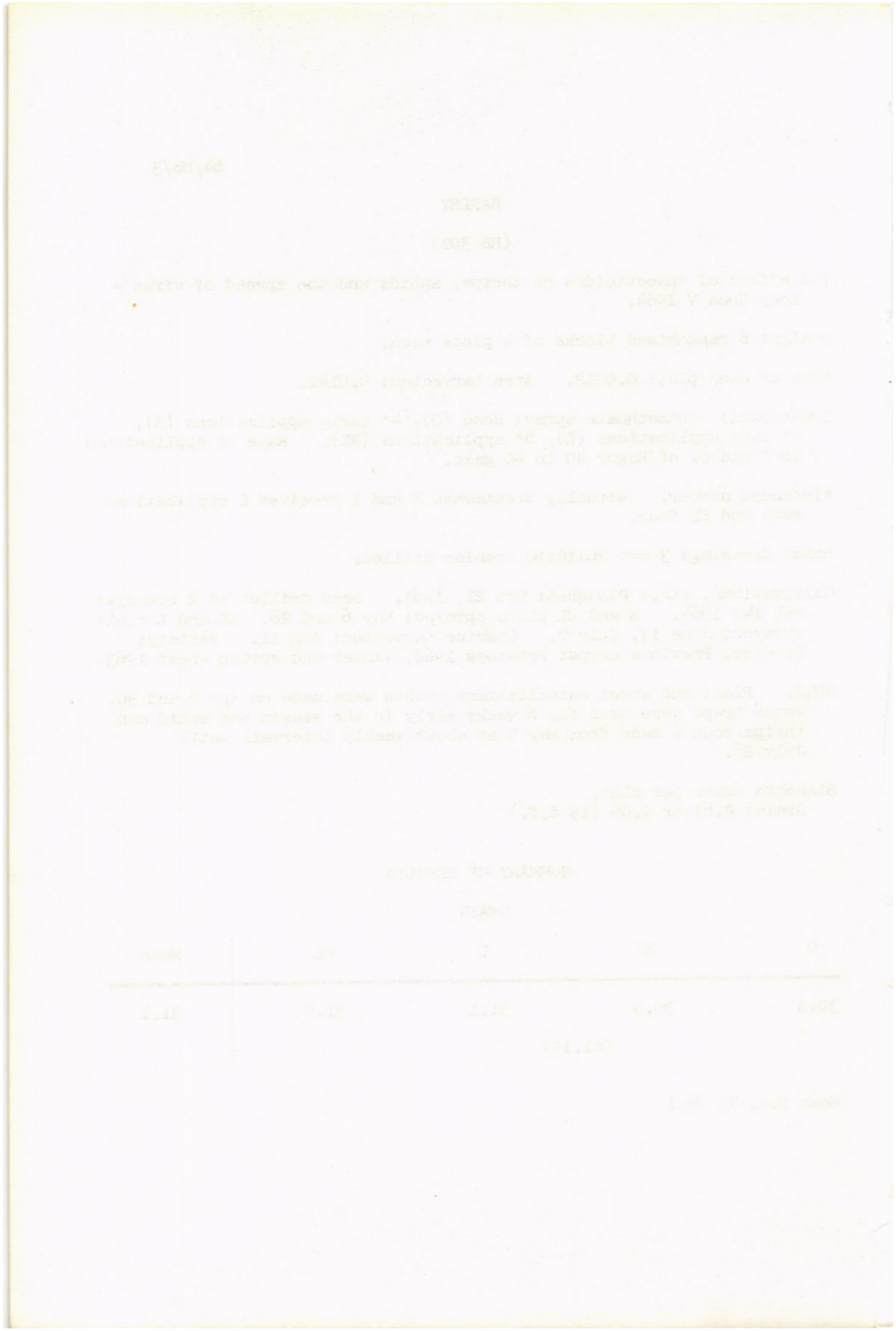
SUMMARY OF RESULTS

GRAIN

0	E	L	EL	Mean
30.3	30.9	31.1	31.9	31.1
	(±1.15)			

Mean D.M. %: 86.1

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64/Dc/1.1

SPRING BEANS

(RBe 101)

Row spacing, seed rates and rates and methods of fertiliser application - Delharding 1964.

Design: 2 replicates of 4 x 2 x 2 x 2 in blocks of 8 plots.

Area of each plot: 0.0193. Area harvested: 0.0133.

Treatments. All combinations of:-
1. Row spacing: 10.5 inches (C), 21 inches (W).
2. Seed rates: 200 lb (L), 300 lb (H).
3. Fertiliser rates: 400 lb (F1), 560 lb (F2) 0:20:20, 500 lb (N1), 700 lb (N2) 6:15:15.
4. Methods of fertiliser application: Broadcast (B), placed (P).

Basal dressing: None.

Cultivations, etc.: Ploughed: Oct 3, 1963. Seed drilled (treatments CB, CP and WB): Apr 3, 1964, treatments WP: Apr 6. Broadcast fertilisers applied: Apr 7. Sprayed with simazine at 1 lb in 40 gals: Apr 8. Combine harvested: Sept 3. Variety: Pedigree Tic. Previous crop: Barley 1962 and 1963.

Standard error per plot.
Grain: 1.45 or 4.4% (28 d.f.)

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64/Dc/1.2

SUMMARY OF RESULTS

GRAIN

		F1	F2	N1	N2	Mean
Mean	(±0.36)	32.7	33.4	33.0	34.1	33.3
						(±0.26)
C	(±0.51)	33.1	33.3	33.0	33.6	33.3
W		32.3	33.5	33.0	34.5	33.3
L	(±0.51)	32.4	32.6	32.7	33.4	32.8
H		33.0	34.3	33.2	34.8	33.8
B	(±0.51)	32.0	32.7	33.1	33.5	32.9
P		33.4	34.1	32.8	34.6	33.7

	C	W	L	H
		(±0.36)		
L	32.9	32.6		
H	33.6	34.0		
B	33.1	32.6	32.4	33.4
P	33.4	34.1	33.2	34.2

Mean D.M. %: 84.4

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64/Dd/1.1

POTATOES

(RP101 and WP201)

Varieties and chitting - Rothamsted (R) Whittlocks and Woburn (W) Horsepool 1964.

Design: 4 randomised blocks of 8 plots each.

Area of each plot: Whittlocks (R): 0.0107. Area harvested: 0.0043.
Horsepool (W): 0.0114. Area harvested: 0.0057.

Treatments: All combinations of:-
1. Chitting: Not chitted (O), chitted seed (C).
2. Varieties: Majestic (M), King Edward (KE).
3. Type of seed: Stock seed (SS), once grown seed (OG).

Basal dressing: Whittlocks (R): 8 cwt 17:11:22 and 8.5 tons dung.
Horsepool (W): 7 cwt 17:11:22.

Cultivations, etc.:
Whittlocks (R). Ploughed: Oct 11, 1963. Dung applied: Feb 6, 1964. Rotary cultivated: Feb 12. Basal dressing applied: Apr 2. Rotary cultivated, potatoes planted*: Apr 29. Earthed up: June 23. Sprayed 3 times with Mancozeb at 1.2 lb in 35 gals: June 30, July 16, July 31. Sprayed with undiluted BUV at 15 gals: Sept 7. Lifted: Sept 15. Previous crops: Winter and spring wheat 1962, spring wheat 1963.
Horsepool (W). Chisel ploughed: Dec 7, 1963. Ploughed: Jan 3, 1964. Rotary cultivated: Apr 28. Basal dressing applied: Apr 14. Potatoes planted: Apr 30. Earthed up: June 16. Sprayed 3 times with mancozeb at 1.2 lb, the first in 50 gals, the second and third in 36 gals: June 24, July 14, July 29. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 8. Lifted: Sept 21. Previous crops: Grass 1962, winter wheat 1963.

*At the time of planting, seed for two rows of plots 116(M OG) and 124(C KE SS) was interchanged. The two remaining rows of each plot were correctly planted.

Standard errors per plot. Total tubers:
Whittlocks (R): 1.078 or 10.2% (21 d.f.)
Horsepool (W): 1.242 or 11.0% (21 d.f.)

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64/Dd/1.2

SUMMARY OF RESULTS

WHITTLOCKS (R)

TOTAL TUBERS

	M	KE	SS	OG	Mean
	(±0.381)		(±0.381)		(±0.270)
O	10.70	9.28	10.57	9.41	9.99
C	11.88	10.51	11.19	11.21	11.20
		M	11.36	11.22	11.29
		KE	10.40	9.40	9.90
	Mean	(±0.270)	10.88	10.31	10.59

PERCENTAGE WARE

	M	KE	SS	OG	Mean
O	90.0	84.1	87.9	86.3	87.1
C	94.3	89.0	90.0	93.3	91.7
		M	92.4	92.0	92.2
		KE	85.5	87.6	86.6
		Mean	88.9	89.8	89.4

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64/Dd/1.3

HORSEPOOL (W)

TOTAL TUBERS

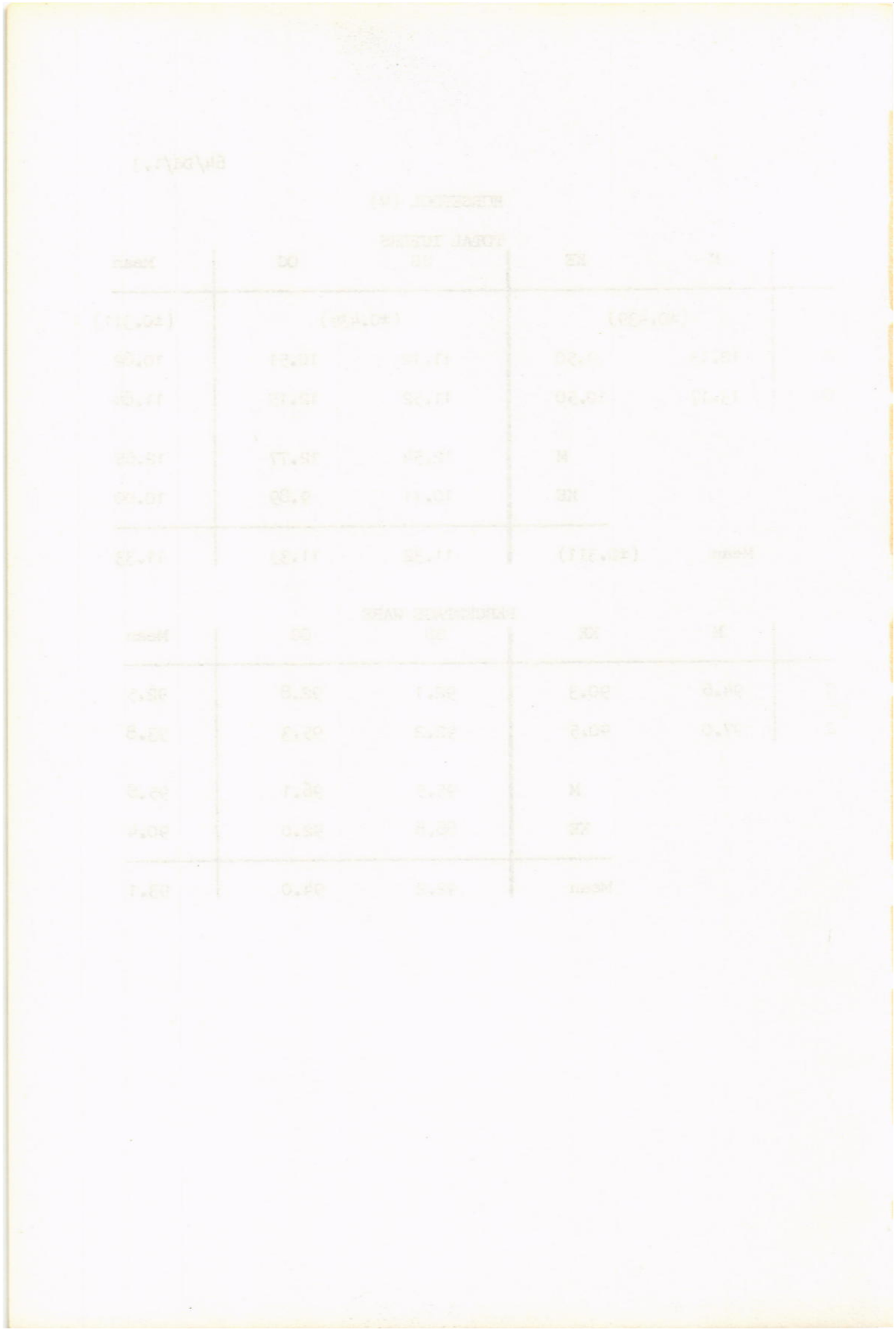
	M	KE	SS	OG	Mean
	(±0.439)		(±0.439)		(±0.311)
O	12.13	9.50	11.12	10.51	10.82
C	13.17	10.50	11.52	12.15	11.84
		M	12.54	12.77	12.65
		KE	10.11	9.89	10.00
	Mean	(±0.311)	11.32	11.33	11.33

PERCENTAGE WARE

	M	KE	SS	OG	Mean
O	94.6	90.3	92.1	92.8	92.5
C	97.0	90.5	92.2	95.3	93.8
		M	95.5	96.1	95.8
		KE	88.8	92.0	90.4
		Mean	92.2	94.0	93.1

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64/Dd/2.1

POTATOES

(RP 201)

Time of burning off haulm - Whittlocks 1964.

Design: 4 randomised blocks of 14 plots each (11 for yield).

Area of each plot: 0.0424. Area harvested: 0.0141.

Treatments:

Fungicide sprays* and times of application	Times of burning off**
None (0)	None (0)
Early 5 (E+)	None (0)
Early 4 (E)	(A)
Early 5 (E+)	(A)
Late 4 (L)	(A)
Early 4 (E)	(B)
Early 5 (E+)	(B)
Early 5 (E+)	(C) (See below)
Late 4 (L)	(B)
Late 5 (L+)	(B)
Early 5 (E+). Sprayed with insecticide(I) (0.25 lb, menazon in 50 gals)	(B)

Each block also contained 3 plots for sampling (no yields), of these 12 plots 6 were treated as 00 - and 6 as E0. The early burning off (A) took place when the mean destruction by blight on control plots was 39% and on sprayed plots (E+) was 0.5%. The late burning off (B) took place when the haulm had almost died because of the dry weather.

NOTE: It was intended to have a later burning off (C) but the season made this unnecessary and so C = B.

* 1.5 lb fungicide containing 80% mancozeb in 50 gals.
** With undiluted BOV at 15 gals.

Basal dressing: 8.5 tons dung, 8 cwt 17:11:22.

Cultivations, etc.: Ploughed: Oct 11, 1963. Dung applied: Feb 6, 1964. Rotary cultivated: Feb 12. Basal dressing applied: Apr 2. Rotary cultivated, potatoes machine planted: Apr 27. Earthed up: June 12. Menazon sprays applied: June 25 and July 24. First spraying with mancozeb (E, E+): June 25, second (E, E+, L, L+): July 13, third (E, E+, L, L+): July 24, fourth (E, E+, L, L+): Aug 7, fifth (E+, L, L+): Aug 20, final (L+): Sept 3. A plots sprayed with BOV: Sept 7. B plots sprayed with BOV: Sept 21. Lifted: Sept 30.

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64/Dd/2.2

Variety: King Edward. Previous crops: Winter and spring wheat 1962, spring wheat 1963.

NOTE: Periodic samples were taken from the sample plots for weights of tubers and blight assessment in tubers.

Standard error per plot.
Total tubers: 0.870 or 6.7% (31 d.f.)

SUMMARY OF RESULTS

		Total tubers	% ware
		(±0.435)	
O	O	12.53	95.2
E+	O	13.86	96.2
E	A	12.31	94.3
E+	A	12.40	95.4
L	A	12.48	94.1
E	B	12.84	95.1
E+	B	13.14 (±0.308)	94.4
L	B	12.92	94.7
L+	B	12.64	93.9
E+I	B	13.53	95.1
Mean		12.89	94.8

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64/Dd/3.1

POTATOES

(RP 501)

Control of blight (Phytophthora infestans) by copper and tin fungicides - Long Hoos IV 1964.

Design: Two 6 x 6 Latin squares, one for each variety - King Edward and Ulster Supreme. Some plots were split for certain additional treatments.

Area of each plot: 0.0129. Area harvested: 0.0077.

Treatments:
- No fungicide (0)
- Commercial copper oxychloride wettable powder at 2.5 lb Cu (1)
- Copper oxychloride at 2.5 lb Cu with 10 lb wax (2)
- As treatment 2 with phenylmercury acetate at 0.03 lb (3)
- Commercial triphenyltin acetate wettable powder at 0.3 lb triphenyltin acetate (4)
- Triphenyltin acetate at 0.3 lb in 10 lb wax (5)

All sprays applied in 100 gals.

NOTE: Additional treatments with copper oxychloride and triphenyltin acetate were applied to certain sub plots, but as there was no blight separate yields were not recorded.

Basal dressing: 7 cwt 17:11:22.

Cultivations, etc.: Ploughed: Sept 12 - 23, 1963. Sprayed three times with sodium trichloroacetate at 18 lb in 40 gals: Sept 25, Oct 1 and Oct 23. Chisel ploughed: Dec 18. Basal dressing applied: Apr 3, 1964. Rotary cultivated: Apr 14. Potatoes machine planted: Apr 15. Earthed up: June 12. Copper and tin fungicides applied: July 28. Lifted: King Edward - Sept 11, Ulster Supreme - Sept 18. Previous crops: Winter wheat 1962 and 1963.

Standard errors per plot. Total tubers:
- King Edward: 0.737 or 10.0% (20 d.f.)
- Ulster Supreme: 0.937 or 10.2% (20 d.f.)

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64/Dd/3.2

SUMMARY OF RESULTS

0	1	2	3	4	5	Mean
			KING EDWARD			
			TOTAL TUBERS			
7.59	7.35	7.34	6.93	7.25	7.94	7.40
			(±0.301)			
			% WARE			
79.9	80.3	79.1	80.3	80.5	81.2	80.2
			ULSTER SUPREME			
			TOTAL TUBERS			
9.70	9.13	9.07	9.11	8.42	9.53	9.16
			(±0.383)			
			% WARE			
90.2	90.7	90.8	89.7	89.9	89.9	90.2

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64/Dd/4.1

POTATOES

(WP 101)

Control of tuber blight (Phytophthora infestans) by fungicide sprays and haulm destruction - Woburn Horsepool 1964.

Design: 6 x 6 Latin square.

Area of each plot: 0.0360. Area harvested: 0.0141.

Treatments: No fungicide, not burnt off (0)
Fungicide sprays*: 3 times early (E)
4 times early (E+)
3 times late (L).
Haulm burnt off with diquat** on sprayed plots. In addition two plots per row (one control and one E+ plot on which the haulm was not burnt off) were used for sampling only.

* 1.5 lb fungicide, containing 80% mancozeb, in 50 gals.
** Reglone at 4 pints in 40 gals.

Basal dressing: 7 cwt 17:11:22.

Cultivations, etc.: Chisel ploughed: Dec 7, 1963. Ploughed: Jan 3 - 10, 1964. Basal dressing applied: Apr 14. Rotary cultivated twice: Apr 23 and 27. Potatoes machine planted: Apr 27. Earthed up: June 12. First spraying with mancozeb (E and E+ plots): June 24, second (E, E+ and L): July 14, third (E, E+ and L): July 28, final (E+ and L): Aug 10. Appropriate plots sprayed with diquat: Sept 21. Lifted: Sept 30. Variety: King Edward. Previous crops: Grass 1962, winter wheat 1963.

NOTE: Periodic samples were taken from the sample plots for weight of tubers and blight assessment in tubers.

Standard error per plot.
Total tubers: 0.681 or 6.5% (15 d.f.)

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64/Dá/4.2

SUMMARY OF RESULTS

O	E	E+	L	Mean
		TOTAL TUBERS		
		(±0.278)		
10.30	10.21	10.52	10.66	10.42
		% WARE		
94.1	94.5	93.4	93.6	93.9

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64/De/1

CARROTS

(WCt 101)

The effect of systemic insecticides on yield through control of motley dwarf virus - Woburn Butt Close 1964.

Design: 6 randomised blocks of 2 plots each.

Area of each plot: 0.0077. Area harvested: 0.0029.

Treatments: None (O), sprayed 5 times with menazon at 0.5 lb in 60 gals (S).

Basal dressing: 8 cwt (10:10:18).

Cultivations, etc.: Ploughed twice: Oct 2, 1963 and Jan 6, 1964. Basal dressing applied: Apr 30. Seed drilled at 4 lb: May 4. Menazon sprays applied: May 27, June 12, June 24, July 14, July 29. Lifted: Sept 7. Variety: New Model Red Cored. Previous crops: Spring beans 1962, winter wheat 1963.

NOTE: Aphid counts and estimates of virus infection were made.

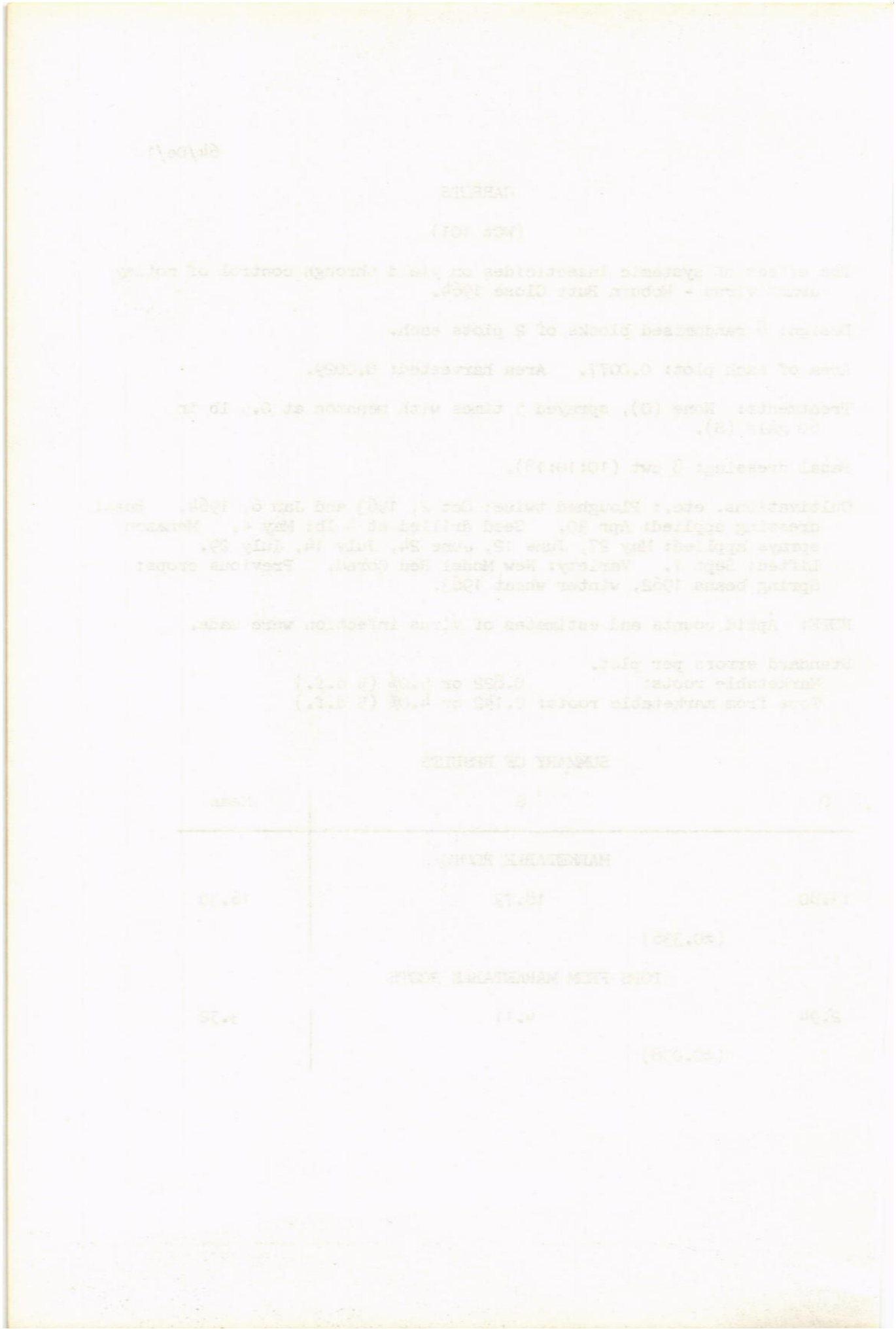
Standard errors per plot.
Marketable roots: 0.822 or 5.0% (5 d.f.)
Tops from marketable roots: 0.142 or 4.0% (5 d.f.)

SUMMARY OF RESULTS

O	S	Mean
	MARKETABLE ROOTS	
13.80	18.79	16.30
	(±0.336)	
	TOPS FROM MARKETABLE ROOTS	
2.94	4.11	3.52
	(±0.058)	

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64/Df/1.1

SUGAR BEET, CARROTS AND RED BEET

Fertilisers and FYM - Woburn Stackyard Series C, 1964.

Design: 3 randomised blocks of 5 plots each per crop.

Area of each plot:	Area harvested:
Sugar beet: 0.0033	0.0030
Other crops: 0.0014	0.0012

Treatments:

- NKNa: 'Nitro-Chalk' at 154 lb N (sugar beet), 112 lb N (carrots), 224 lb N (red beet), muriate of potash at 280 lb K and sodium chloride at 26 lb Na.
- NKNaP1: As NKNa, plus triple superphosphate at 85 lb P.
- NKNaP2: As NKNa, plus triple superphosphate at 170 lb P.
- D: Dung at 15 tons.
- DP1: Dung at 15 tons plus triple superphosphate at 85 lb P.

NOTES (1): The amounts of P in treatment P2 and of K and Na applied are equivalent to the amounts of these nutrients in the 15 tons FYM.

(2): On one of the NKNaP2 plots of sugar beet the N was not applied. An estimated value was used in the analysis.

Basal dressing: 50 lb Mg as magnesium sulphate.

Cultivations, etc.: Ground chalk applied at 30 cwt: Mar 3, 1964. Rotary cultivated: Mar 10. Ground chalk applied at 10 cwt: Apr 10. Sprayed with DDT at 0.6 lb in 20 gals: May 19. Sprayed twice with a mixture of menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals all crops: June 8 and 28. Carrots and sugar beet only: July 28 and Aug 7.

Sugar beet: Fertilisers applied: Mar 23, 1964. Dug: Mar 23 - Apr 2. Seed drilled at 18 lb: Apr 14. Singled: May 21 - June 3. Lifted: Oct 26. Variety: Klein E.

Carrots: Fertilisers applied, plots dug: Apr 3, 1964. Seed drilled at 7 lb: Apr 27. Singled: June 17 - 23. Lifted: Sept 8. Variety: Autumn King.

Red beet: Fertilisers applied, plots dug: Apr 7, 1964. Seed drilled at 30 lb: May 1. Singled: May 29 - June 16. Lifted: Aug 12. Variety: Detroit Globe.

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Standard errors per plot.

Sugar beet,	roots:	0.748 or 3.6%	(7 d.f.)
	total sugar:	1.81 or 2.2%	(7 d.f.)
	tops:	0.739 or 7.0%	(7 d.f.)
Carrots,	roots:	1.142 or 6.6%	(8 d.f.)
	tops:	0.385 or 7.3%	(8 d.f.)
	roots + tops:	1.498 or 6.6%	(8 d.f.)
Red beet,	roots:	0.536 or 3.8%	(8 d.f.)
	tops:	0.283 or 4.7%	(8 d.f.)
	roots + tops:	0.788 or 3.9%	(8 d.f.)

SUMMARY OF RESULTS

NKNa	NKNaP1	NKNaP2	D	DP1	Mean
		SUGAR BEET			
		ROOTS			
		(±0.432)			
19.24	20.93	22.01	20.63	21.19	20.80
		SUGAR %			
19.4	19.4	19.6	19.6	19.4	19.5
		TOTAL SUGAR			
		(±1.05)			
74.7	81.4	86.3	80.8	82.2	81.1
		TOPS			
		(±0.427)			
11.01	12.15	11.71	9.08	8.67	10.52

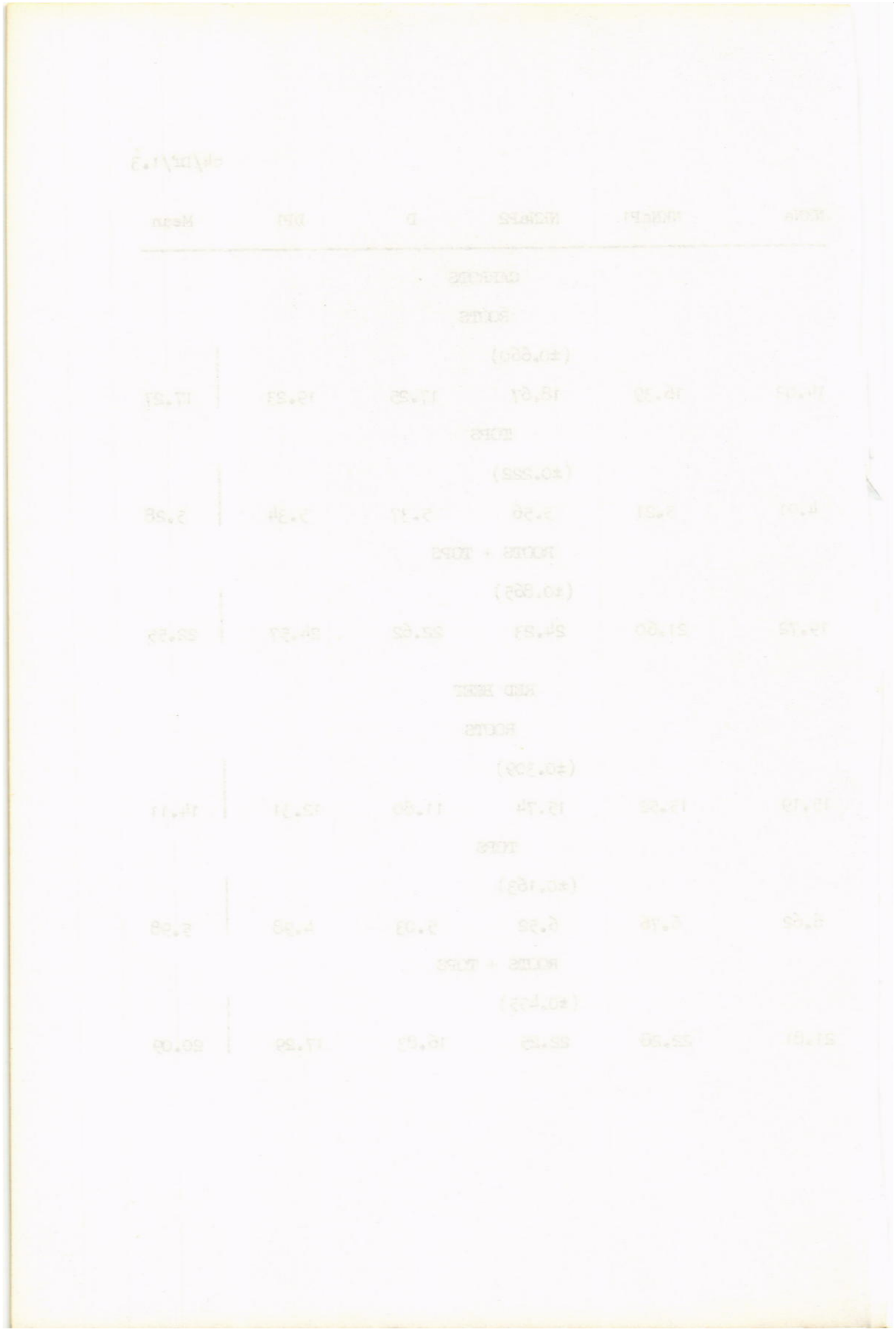
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NKNa	NKNaP1	NKNaP2	D	DP1	Mean
		CARROTS			
		ROOTS			
		(±0.660)			
14.82	16.39	18.67	17.25	19.23	17.27
		TOPS			
		(±0.222)			
4.91	5.21	5.56	5.37	5.34	5.28
		ROOTS + TOPS			
		(±0.865)			
19.72	21.60	24.23	22.62	24.57	22.55
		RED BEET			
		ROOTS			
		(±0.309)			
15.19	15.52	15.74	11.80	12.31	14.11
		TOPS			
		(±0.163)			
6.62	6.76	6.52	5.03	4.98	5.98
		ROOTS + TOPS			
		(±0.455)			
21.81	22.28	22.25	16.83	17.29	20.09

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64/Dg/1.1

GRASS

Effect of N-serve on old grass - Highfield odds and ends VII, 1964.

Design: 4 randomised blocks of 12 plots each.

Area of each plot: 0.0008. Area harvested: 0.0005.

Treatments: None, (2 plots per block) - (0), and all combinations of:-
1. Levels of N: 100 lb (L1), 200 lb (L2).
2. Kinds of fertiliser: Ammonium nitrate (AN), urea nitrate (UN), ammonium sulphate (AS) with N-serve at none (NS0), 1 (NS1) or 2 (NS2) per cent of the N applied.

Basal dressing: 0:14:28 to supply 25 lb P_2O_5 and 50 lb K_2O.

Cultivations, etc.: Fertilisers and N-serve applied: Mar 19, 1964.
Cut twice: May 20 and July 7.

NOTE: Samples were taken for dry matter and nitrogen determination.

Standard errors per plot. Dry matter:
1st cut: 3.06 or 9.4% (33 d.f.)
2nd cut: 3.35 or 16.0% (33 d.f.)
Total of 2 cuts: 4.77 or 8.9% (33 d.f.)

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SUMMARY OF RESULTS

	0	AN	UN	ASNSO	ASNS1	ASNS2	Mean
			1ST CUT				
			(±1.53)				(±0.68)
L1		34.6	31.1	36.6	36.1	33.8	34.4
L2		42.1	29.9	41.4	39.4	42.1	39.0
Mean (±1.08)	12.5	38.4	30.5	39.0	37.8	38.0	32.7*

Mean D.M. %: 16.1

			2ND CUT				
			(±1.67)				(±0.75)
L1		18.4	19.4	18.1	16.9	16.7	17.9
L2		21.9	23.3	25.0	23.6	24.5	23.7
Mean (±1.18)	21.7	20.1	21.3	21.5	20.2	20.6	20.9*

Mean D.M. %: 24.5

			TOTAL OF 2 CUTS				
			(±2.39)				(±1.07)
L1		53.0	50.5	54.7	53.0	50.5	52.3
L2		64.0	53.1	66.3	63.0	66.7	62.6
Mean (±1.69)	34.3	58.5	51.8	60.5	58.0	58.6	53.6*

Mean D.M. %: 20.3

* General mean

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64/Dg/2.1

GRASS

Levels of N and K - Harwoods Piece 1964.

Design: 4 randomised blocks of 12 plots each.

Area of each plot: 0.0014. Area harvested: 1st and 2nd cuts - 0.0006, 3rd cut - 0.0008.

Treatments: All combinations of:-
1. N: None (N0), 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N per cut as 'Nitro-Chalk'.
2. K: None (K0), 0.6 (K1), 1.2 (K2) cwt K20 per cut as muriate of potash.

Both applied in spring and after each cut except the last.

Basal dressing: 0.6 cwt P205 in seedbed as triple superphosphate.

Cultivations, etc.: Ploughed: Nov 18, 1963. Rotary cultivated, fertilisers applied, seed drilled at 30 lb: Apr 2, 1964. Cut 3 times: July 1, Aug 12, Oct 28. Fertilisers applied after first 2 cuts. Variety: S22 Italian Ryegrass. Previous crops: Barley 1962 and 1963.

NOTE: Samples were taken for estimation of soluble carbohydrate and dry matter in grass.

Standard errors per plot.	Dry matter:
1st cut:	3.15 or 13.8% (33 d.f.)
2nd cut:	1.48 or 7.2% (33 d.f.)
3rd cut:	1.24 or 13.5% (33 d.f.)
Total of 3 cuts:	4.32 or 8.2% (33 d.f.)

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64/Dg/2.2

SUMMARY OF RESULTS

DRY MATTER

	N0	N1	N2	N3	Mean
		1ST CUT			
		(±1.58)			(±0.79)
K0	11.3	18.2	25.2	28.4	20.8
K1	13.7	23.1	28.7	32.9	24.6
K2	13.3	19.6	27.5	31.4	22.9
Mean (±0.90)	12.8	20.3	27.1	30.9	22.7
		2ND CUT			
		(±0.74)			(±0.36)
K0	6.9	18.8	26.5	30.1	20.5
K1	7.9	18.8	26.1	28.8	20.4
K2	7.6	19.1	26.2	29.5	20.6
Mean (±0.43)	7.5	18.9	26.3	29.4	20.5

Mean D.M. %: 1st cut 20.3
2nd cut 19.1

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64/Dg/2.3

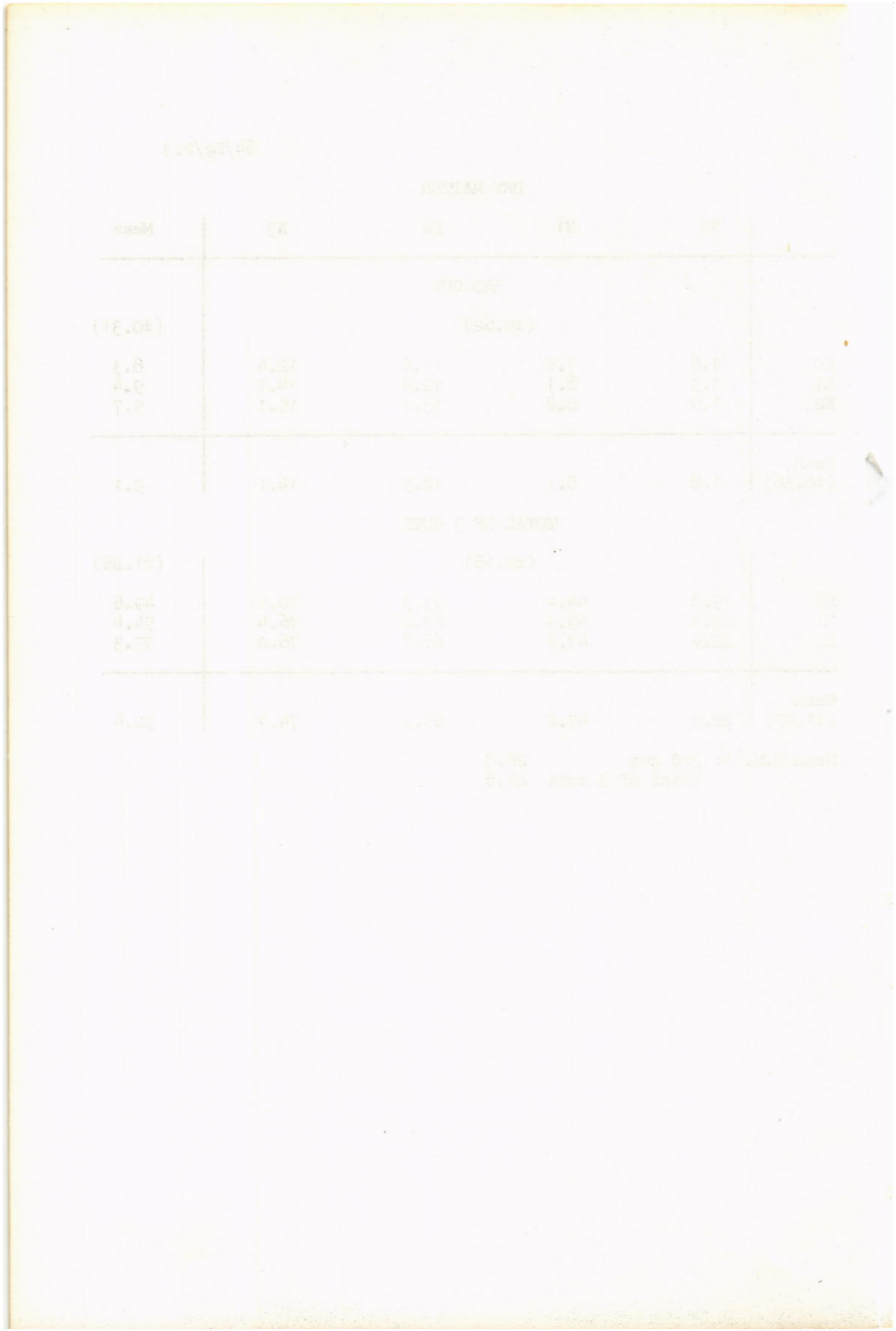
DRY MATTER

	N0	N1	N2	N3	Mean
		3RD CUT			
		(±0.62)			(±0.31)
K0	1.6	7.5	11.6	12.4	8.3
K1	1.9	8.1	12.9	14.7	9.4
K2	1.9	8.8	13.1	15.1	9.7
Mean (±0.36)	1.8	8.1	12.5	14.1	9.1
		TOTAL OF 3 CUTS			
		(±2.16)			(±1.08)
K0	19.8	44.4	63.3	70.8	49.6
K1	23.4	49.9	67.8	76.4	54.4
K2	22.9	47.5	66.7	76.0	53.3
Mean (±1.25)	22.0	47.2	65.9	74.4	52.4

Mean D.M. %: 3rd cut 26.0
Total of 3 cuts 21.8

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METEOROLOGICAL RECORDS 1964 - ROTHAMSTED

(Departure from long period means in brackets)

Month	Total sunshine: hours	Mean temperature: °F Air(1)	Dew point	In ground 1 ft.	In ground 4 ft.	Ground(2) frosts	Total rainfall: in. 1/1000 acre gauge	Rain(3) days	Drainage through 20 in. soil: in.	Wind(4) m.p.h.
Jan.	43 (-10.3)	35.5 (-1.7)	33.6	37.3	42.7	26	0.95 (-1.58)	14	0.71	3.5
Feb.	58 (-11.3)	38.8 (+0.6)	35.4	38.5	41.7	19	1.03 (-0.89)	11	0.49	4.8
Mar.	62 (-54.5)	38.3 (-3.1)	34.1	39.9	41.6	17	3.30 (+1.40)	14	2.75	6.0
Apr.	101 (-53.4)	46.6 (+0.7)	41.1	45.1	43.3	8	3.33 (+1.41)	17	1.82	5.9
May	195 (-0.9)	56.3 (+4.4)	48.7	54.5	48.1	1	1.61 (-0.51)	13	0.05	5.1
June	148 (-55.9)	56.9 (-0.4)	50.1	58.8	52.8	0	4.02 (+1.83)	15	2.20	3.4
July	189 (-3.9)	61.5 (+0.8)	54.9	62.4	56.2	0	1.29 (-1.26)	11	0.01	3.6
Aug.	201 (+19.0)	60.7 (+0.6)	53.2	61.7	58.3	2	0.57 (-2.04)	12	-	3.7
Sept.	194 (+49.5)	57.6 (+1.5)	50.3	57.6	57.2	2	0.74 (-1.66)	8	-	3.8
Oct.	120 (+16.1)	46.9 (-2.2)	42.7	49.9	53.9	10	0.89 (-2.08)	13	-	2.8
Nov.	59 (-2.4)	44.4 (+1.9)	41.8	46.6	50.3	11	1.31 (-1.51)	16	0.10	4.5
Dec.	46 (+0.3)	36.7 (-1.9)	33.6	40.4	47.0	20	2.21 (-0.40)	17	1.81	5.9
Year	1416(-107.7)	48.3 (0.0)	43.3	49.4	49.4	116	21.25 (-7.29)	161	9.94	4.4

(1) Mean of maximum and minimum.
(2) Number of nights grass minimum 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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64/E/1.2

METEOROLOGICAL RECORDS 1964 - WOBURN

Month	Total sunshine: hours	Mean temperature: F		Grass minimum: F	Total rainfall: in 8 in. gauge	Rain(2) days
		Air(1)	In ground 1 ft.			
January	51	36.0	37.3	27.9	0.80	13
February	58	39.3	38.6	30.2	0.83	12
March	57	38.7	40.2	31.6	3.19	14
April	107	47.1	45.5	37.4	2.53	16
May	202	55.7	55.2	42.6	1.12	12
June	144	57.0	59.3	46.5	3.34	13
July	184	61.4	63.2	47.6	0.92	8
August	203	60.1	62.3	46.0	0.82	12
September	197	57.1	57.8	40.1	1.10	7
October	127	47.1	49.9	33.7	0.91	15
November	65	45.0	46.7	34.4	0.81	10
December	48	37.8	40.3	27.5	1.57	18
Year*	1443	48.5	49.7	37.1	17.94	150

(1) Mean of maximum and minimum

(2) Number of days rainfall was 0.01 inches or more

*Mean or total

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METEOROLOGICAL RECORDS 1964 - 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.	43 (-10.3)	35.5 (-1.7)	33.6	37.3	42.7	26	0.95 (-1.58)	14	0.71	3.5
Feb.	58 (-11.3)	38.8 (+0.6)	35.4	38.5	41.7	19	1.03 (-0.89)	11	0.49	4.8
Mar.	62 (-54.5)	38.3 (-3.1)	34.1	39.9	41.6	17	3.30 (+1.40)	14	2.75	6.0
Apr.	101 (-53.4)	46.6 (+0.7)	41.1	45.1	43.3	8	3.33 (+1.41)	17	1.82	5.9
May	195 (-0.9)	56.3 (+4.4)	48.7	54.5	48.1	1	1.61 (-0.51)	13	0.05	5.1
June	148 (-55.9)	56.9 (-0.4)	50.1	58.8	52.8	0	4.02 (+1.83)	15	2.20	3.4
July	189 (-3.9)	61.5 (+0.8)	54.9	62.4	56.2	0	1.29 (-1.26)	11	0.01	3.6
Aug.	201 (+19.0)	60.7 (+0.6)	53.2	61.7	58.3	2	0.57 (-2.04)	12	-	3.7
Sept.	194 (+49.5)	57.6 (+1.5)	50.3	57.6	57.2	2	0.74 (-1.66)	8	-	3.8
Oct.	120 (+16.1)	46.9 (-2.2)	42.7	49.9	53.9	10	0.89 (-2.08)	13	-	2.8
Nov.	59 (-2.4)	44.4 (+1.9)	41.8	46.6	50.3	11	1.31 (-1.51)	16	0.10	4.5
Dec.	46 (+0.3)	36.7 (-1.9)	33.6	40.4	47.0	20	2.21 (-0.40)	17	1.81	5.9
Year	1416(-107.7)	48.3 (0.0)	43.3	49.4	49.4	116	21.25 (-7.29)	161	9.94	4.4

(1) Mean of maximum and minimum.
(2) Number of nights grass minimum 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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64/E/1.2

METEOROLOGICAL RECORDS 1964 - WOBURN

Month	Total sunshine: hours	Mean temperature: F Air(1)	Mean temperature: F In ground 1 ft.	Grass minimum: F	Total rainfall: in 8 in. gauge	Rain(2) days
January	51	36.0	37.3	27.9	0.80	13
February	58	39.3	38.6	30.2	0.83	12
March	57	38.7	40.2	31.6	3.19	14
April	107	47.1	45.5	37.4	2.53	16
May	202	55.7	55.2	42.6	1.12	12
June	144	57.0	59.3	46.5	3.34	13
July	184	61.4	63.2	47.6	0.92	8
August	203	60.1	62.3	46.0	0.82	12
September	197	57.1	57.8	40.1	1.10	7
October	127	47.1	49.9	33.7	0.91	15
November	65	45.0	46.7	34.4	0.81	10
December	48	37.8	40.3	27.5	1.57	18
Year*	1443	48.5	49.7	37.1	17.94	150

(1) Mean of maximum and minimum

(2) Number of days rainfall was 0.01 inches or more

*Mean or total

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