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ROTHAMSTED RESEARCH

Yields of the Field Experiments 1965

Full Table of Content



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Rothamsted Research (1966) *Default Title ;* Yields Of The Field Experiments 1965, pp 1 - 284 **- DOI: https://doi.org/10.23637/ERADOC-1-159**

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Rothamsted Experimental Station

Harpenden

Lawes Agricultural Trust

NUMERICAL RESULTS

of the

FIELD

EXPERIMENTS

1965

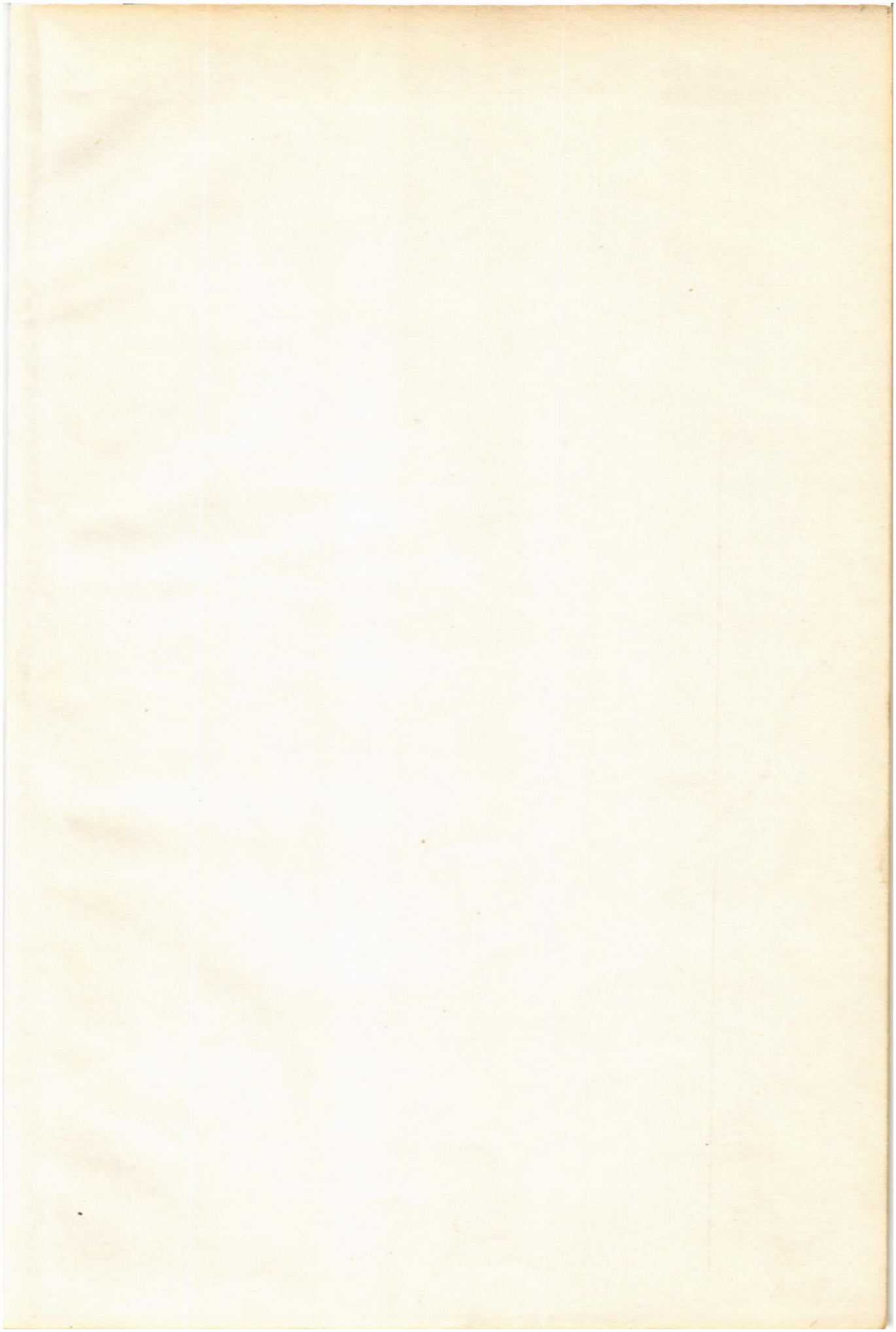
This report includes only experiments conducted at Rothamsted, Woburn and Saxmundham. The design and supervision of these experiments are the responsibility of the Field Plots Committee (present members: F. Yates (Chairman), G.V. Dyke (Secretary), G.W. Cooke, P.H. Gregory, F.G.W. Jones, J.R. Moffatt, H.D. Patterson, C.A. Thorold, D.J. Watson).

Price: 10/-

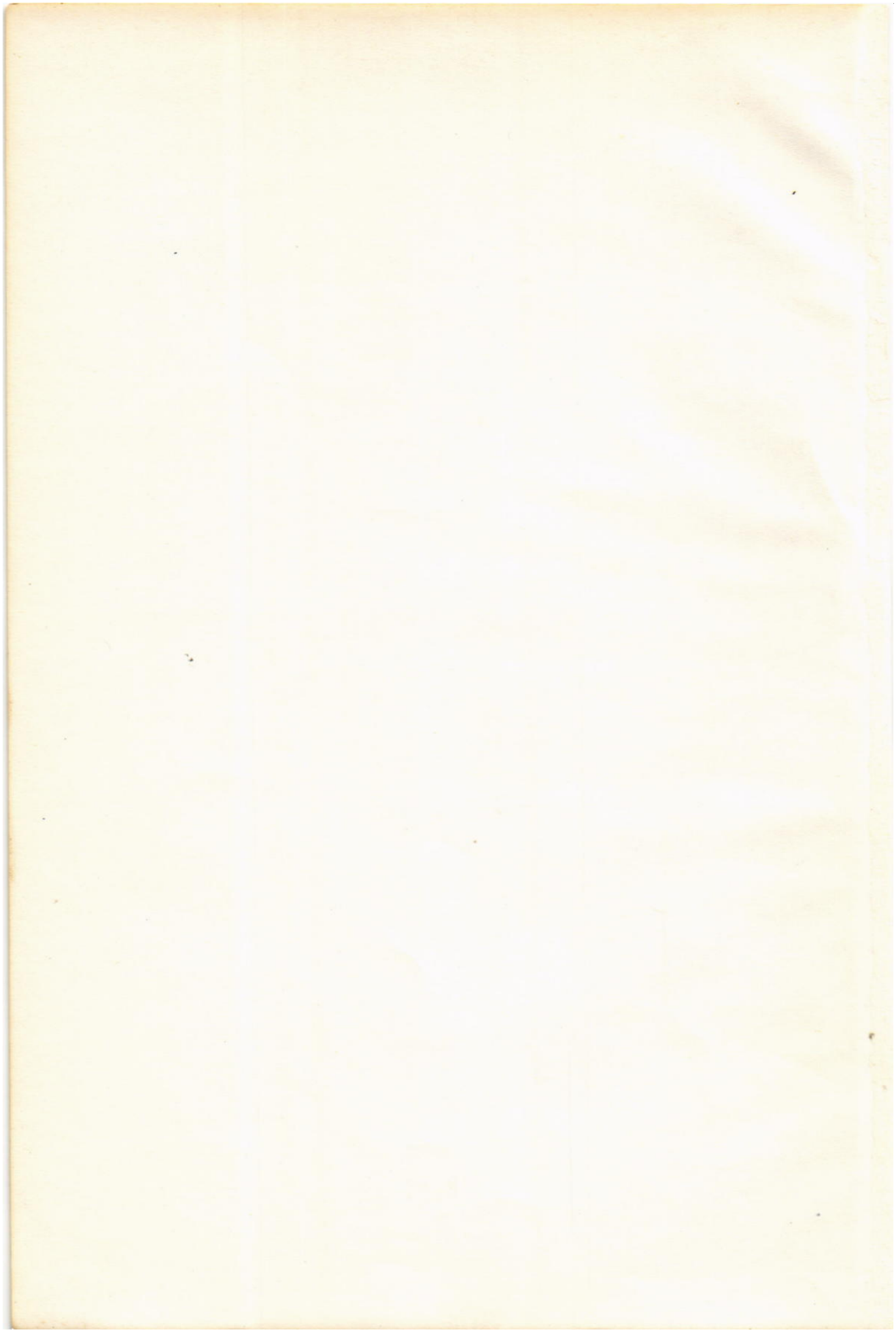
Published 1966

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CONTENTS 1965

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	Fallow	(BN)	A/5
Park Grass	Hay	(PG)	A/6
Hoosfield Exhaustion Land	Barley	(EX)	A/7
Rothamsted Garden	Clover	(GC)	A/8
Woburn Stackyard	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&WRF)	B/2
Green manuring	Woburn	(WGM)	B/3
Ley and arable rotations	Woburn	(WLA)	B/4
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Residual phosphate rotation	Rothamsted	(RP)	B/7
Cultivation-weedkiller rotation	Rothamsted	(CW)	B/8
Cultivation-weedkiller rotation	Woburn	(WCW)	B/9

CROP SEQUENCE EXPERIMENTS*

CROPS IN 1965

Levels of K and Mg Rothamsted & Woburn	Barley, potatoes and sugar beet	(LM & WAC)	C/1
Intensive barley growing	Cereals	(IB)	C/2
Long term liming Rothamsted & Woburn	Barley	(LL & WLL)	C/3
Methods of application of fertiliser 1964-65 Rothamsted & Woburn	Winter wheat	(AY & WBC)	C/4
Methods of application of fertiliser 1965-66 Woburn	Potatoes	(WBT)	C/5
Levels of N and K	Grass 8th 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 1965 (CONTD.)

CROP SEQUENCE EXPERIMENTS* (continued)

Cereal disease reference plots	Wheat	(AQ)	C/9
N and NPK residues	Barley	(AX)	C/10
Chemical control of wireworm	Spring wheat	(BB)	C/11
Row spacing N and paraquat	Lucerne - 2nd year	(AZ)	C/12
Paraquat	Barley	(BA)	C/13
Irrigation	Potatoes and spring beans	(IR)	C/14
1-year leys for wheat Woburn	Winter wheat	(WAS)	C/15
Trefoil and ryegrass green manures Woburn	Sugar beet	(WBE)	C/16
Row spacing and fertilisers 1964-65 Woburn	Barley	(WBD)	C/17
Row spacing and fertilisers 1965-66 Woburn	Potatoes	(WBU)	C/18
Soil structure 2 Woburn	Red beet		C/19
Soil structure 4 Woburn	Lettuce and red beet		C/20
Oxamide	Grass		C/21
NPK	Old grass (Park Grass microplots)		C/22
Growth study residues	Barley	(BV)	C/23
Sod seeding and pests	Winter wheat	(BH)	C/24
Intensive winter barley	Winter barley	(BJ)	C/25
Legumes and barley	Barley	(BP)	C/26
Previous crops and N for barley	Spring wheat, kale and ryegrass	(BQ)	C/27
Rate of action of P fertilisers	Early potatoes and radishes		C/28
Formalin and N Rothamsted (2 sites) and Woburn	Spring wheat	(BR,BS & WBM)	C/29
Scorch study Woburn	Spring wheat-2nd year	(WBL)	C/30
Fumigants Woburn	Spring wheat	(WBO)	C/31
K and protein synthesis Woburn	Grass		C/32
N and cutting	Old Grass (Park Grass microplots)		C/33

ANNUAL EXPERIMENTS*

Winter wheat	Varieties and N	(RW301)	Da/1
Winter and spring wheat	Varieties and N	(RW201)	Da/2
Winter wheat	Row spacing - Rothamsted & Woburn	(RW401&WW101)	Da/3
Winter wheat	Spun seed	(RW501)	Da/4
Winter wheat	Sowing dates & bulb fly	(BG1)	Da/5
Spring wheat	CCC	(RW601)	Da/6

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CONTENTS 1965 (CONTD.)

ANNUAL EXPERIMENTS* (continued)

Barley	Row spacing - Rothamsted & Woburn	(RB101&WB101)	Db/1
Barley	Urea-Woburn	(WB201)	Db/2
Winter beans	Irrigation and row spacing	(RBe101)	Dc/1
Potatoes	DSA	(RP101)	Dd/1
Potatoes	Effect of gaps	(RP201)	Dd/2
Potatoes	Oospora	(RP301)	Dd/3
Potatoes	Rhizoctonia	(RP401)	Dd/4
Potatoes	Times of burning off	(RP501)	Dd/5
Potatoes	Fungicide sprays	(RP701)	Dd/6
Potatoes	soil fungicides and cultivations	(RP801)	Dd/7
Potatoes	Soil fungicides		Dd/8
Potatoes	Tuber blight-Woburn	(WP101)	Dd/9
Carrots	Motley Dwarf Virus - Woburn	(WCt101)	De/1
Kale	Urea-Woburn	(WK/E)	Df/1

MISCELLANEOUS DATA

Meteorological records	Rothamsted & Woburn	E/1

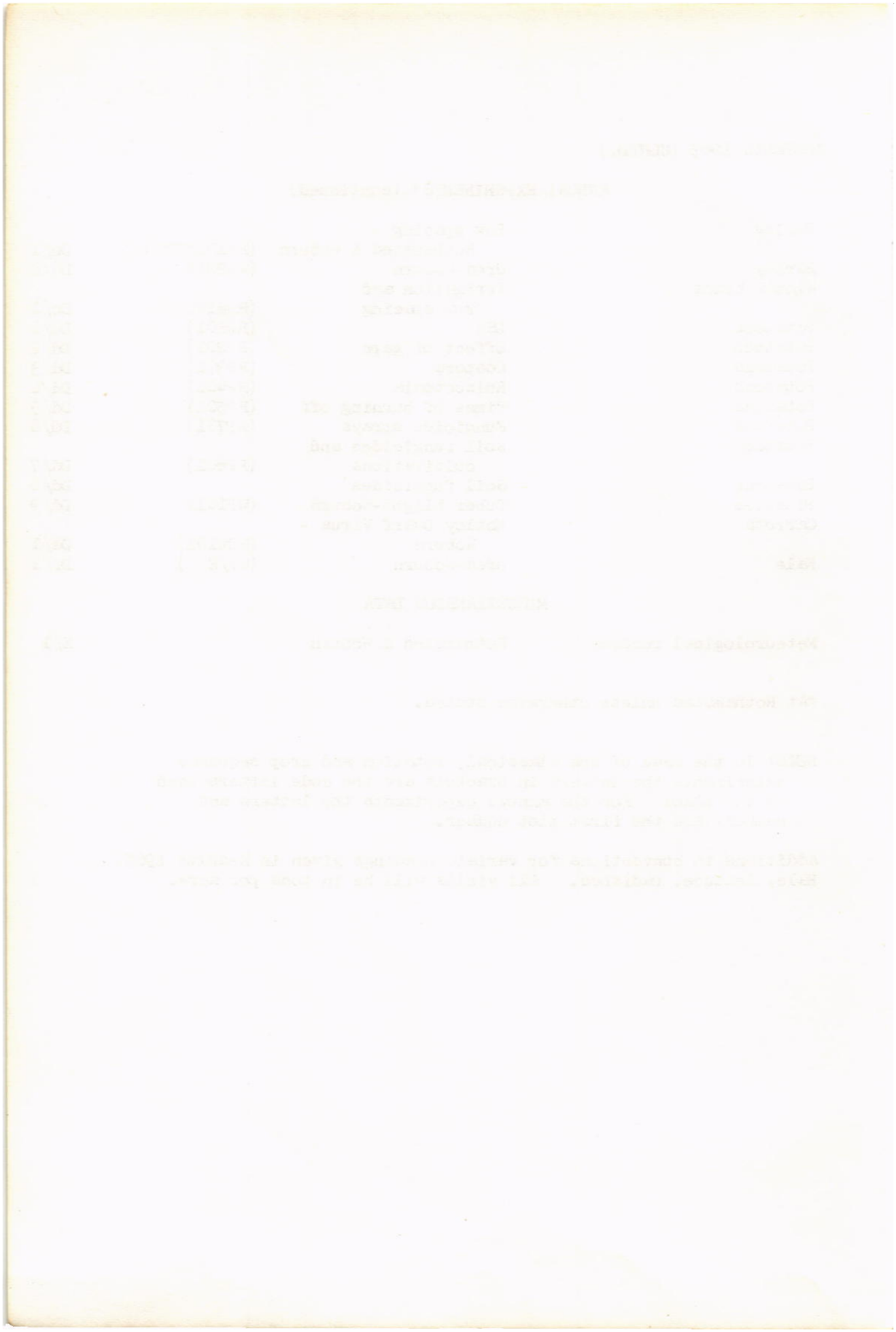
*At Rothamsted unless otherwise stated.

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.

Additions to conventions for variate headings given in Results 1965.
Kale, lettuce, radishes. All yields will be in tons per acre.

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65/A/1.1

WHEAT - BROADBALK 1965

(BK)

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

Cultivations, etc.:

CROPPED SECTIONS: Ground chalk applied: Sept 9, 1964. Ploughed: Oct 9 - 14. Dung applied: Oct 13. Autumn fertilisers applied: Oct 19. Seed drilled at 180 lb: Oct 26. Spring fertilisers applied: Apr 26, 1965. Second dressing of nitrate of soda applied to plot 16: May 10. Sprayed* with MCPA at 1.13 lb and dicamba at 0.08 lb in 34 gals: May 11. Combine harvested: Sept 21. Variety: Squarehead's Master 13/4 (Rothamsted seed from Broadbalk field).

FALLOW SECTION: (IV) Ploughed: Oct 9 - 14, 1964, Nov 30, July 21, 1965.

BROADBALK WILDERNESS: Cultivations, etc.:

Ungrazed meadow (north): Shrubs grubbed out: Nov 3 - 19, 1964.

Grazed meadow (centre): Grazed by sheep: Apr 26 - May 4, 1965, May 22 - 28, June 15 - 25, July 19 - 29, Aug 18 - 31, Oct 4 - Nov 4. Grass topped: May 3, May 28, June 25, July 29, Sept 1.

* Except Section 5A.

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SUMMARY OF RESULTS

GRAIN

Section	IV	VA	II	IB	VB	IA	
Years after fallow	1	2	3	4	7	14	Mean
2A	32.7	29.3	27.5	25.9	28.3	24.1	28.8
2B	31.5	26.3	26.6	24.2	26.9	24.9	27.5
3	23.4	13.9	8.2	8.0	7.2	9.7	13.0
5	27.1	20.6	9.3	9.0	10.7	9.7	15.7
6	24.0	14.7	14.7	13.5	13.7	12.7	16.8
7	21.5	21.7	23.1	20.9	18.9	22.2	21.6
8	26.5	24.6	23.1	26.5	22.4	19.7	24.4
9	23.3	21.4	19.2	13.5	18.6	17.7	19.6
10	18.4	22.0	18.3	14.0	14.9	10.7	17.2
11	17.9	25.8	16.5	15.5	17.1	14.7	17.8
12	18.8	21.3	17.0	17.7	14.5	16.5	17.8
13	21.2	21.1	20.0	16.4	17.4	19.3	19.6
14	21.0	20.4	18.8	19.7	17.1	14.5	19.2
15	24.7	15.3	18.3	18.5	22.1	18.7	20.2
16	20.4	22.8	20.5	20.4	21.6	16.8	20.6
17	20.3	13.5	7.9	5.6	8.7	3.7	11.5
18	24.2	15.3	18.5	15.5	23.7	19.6	20.0
19	26.1	22.9	19.1	18.4	19.6	16.9	21.3
20			12.2	17.0		12.4	14.0

Mean D.M. %: 79.3

NOTE: The yields above are calculated (as in all experiments in the 'Results') from the weight of 'first' grain delivered by the combine harvester, adjusted only for moisture content. On certain sub-plots in 1965 samples were separated into wheat, weed seeds and rubbish. Results:-

% weeds plus rubbish

	Plot No				
	2	5	7	9	18
Section VA	4	19	9	12	34
Section VB	2	8	3	4	2

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65/A/1.3

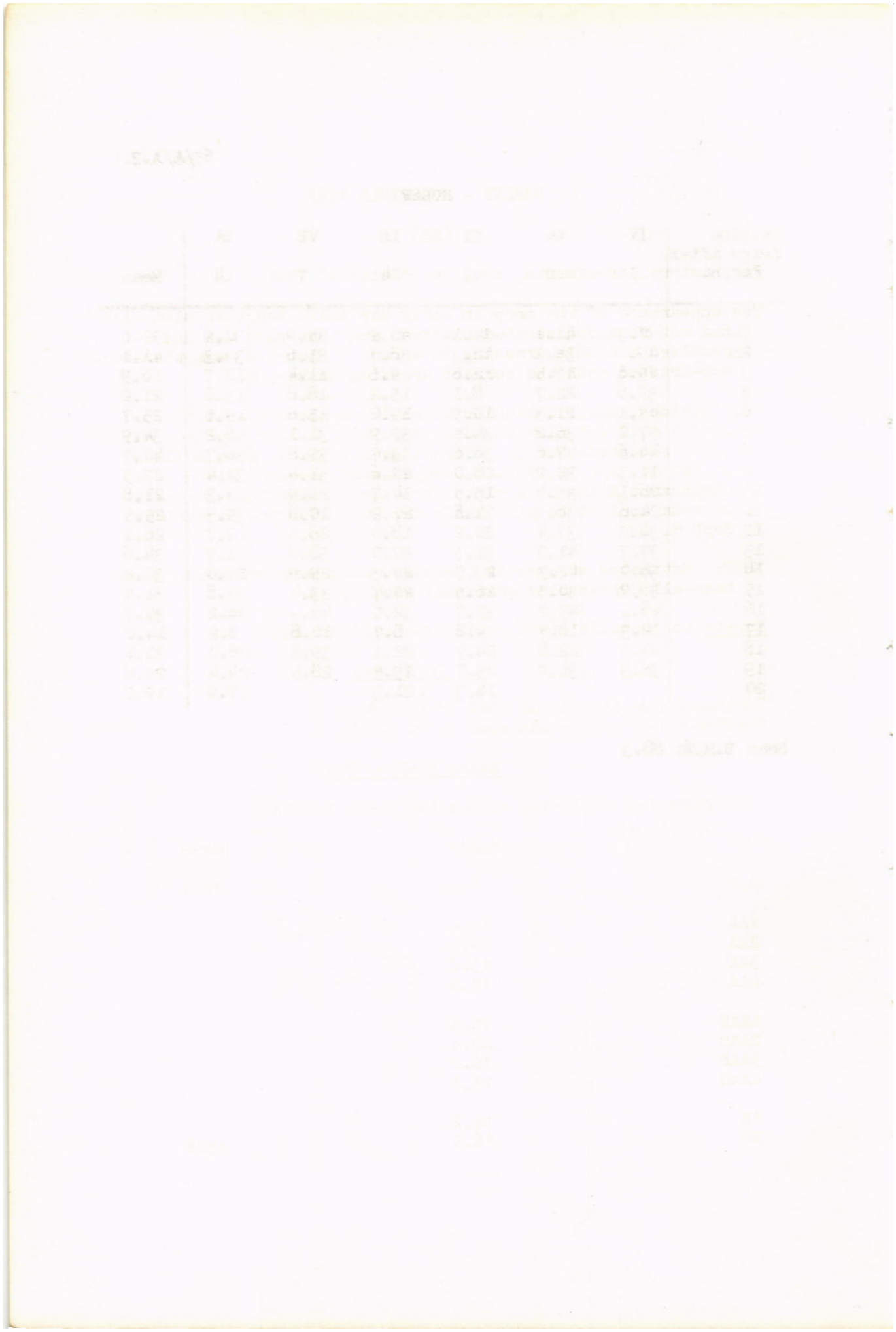
STRAW

Section Years after fallow	IV 1	VA 2	II 3	IB 4	VB 7	IA 14	Mean
2A	47.3	41.1	34.3	40.9	35.9	30.9	39.6
2B	49.0	35.3	42.3	38.7	35.6	30.3	41.1
3	29.6	15.5	12.6	9.6	11.4	10.7	16.9
5	39.8	22.7	8.1	15.2	18.8	13.8	21.2
6	43.1	21.3	19.9	19.0	15.6	19.6	25.7
7	37.1	36.2	34.5	32.9	31.1	36.2	34.9
8	44.6	47.6	38.6	33.9	39.8	36.7	40.7
9	31.5	32.9	28.0	23.6	31.4	30.4	29.5
10	26.1	35.3	15.5	14.7	21.9	20.3	21.8
11	24.6	38.3	21.8	21.9	19.8	39.3	25.5
12	34.3	37.4	20.2	18.0	26.5	12.7	26.1
13	37.7	41.2	31.5	27.0	38.0	31.7	34.6
14	38.0	42.3	20.5	27.3	29.9	20.0	30.0
15	36.7	30.5	26.5	27.7	33.4	35.8	31.4
16	46.1	43.2	35.7	32.5	42.4	34.2	39.7
17	22.3	18.3	9.6	8.7	10.8	8.2	14.0
18	40.5	22.8	24.5	22.1	39.2	28.0	30.4
19	36.3	31.9	25.7	25.5	28.5	24.4	29.6
20			14.3	21.3		27.9	19.2

Mean D.M.%: 88.3

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65/A/2.1

BARLEY - HOOSFIELD 1965

(HB)

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

The appearance of the crop in early May indicated that plot 4AAS had not received seedbed nitrogen and that plot 4AA had received a double dressing in error. Plot 4AAS was therefore top-dressed with the correct dressing on May 20.

Cultivations, etc.: Quinquennial chalk supplement applied to series A, C and plot 5A: Sept 26, 1964. Dung applied, all plots ploughed: Nov 3. Fertilisers applied, seed drilled at 160 lb: Apr 1, 1965. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 34 gals): May 14. Nitrate of soda applied to plot 4AAS: May 20. Combine harvested: Sept 9.

NOTE: Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made.

Errata to 'Details' 1962, p.12 Hoosfield Barley.

Treatment

Treatment for 3AA should read N' K Na Mg.
Treatment for 4AA should read N' PK Na Mg.

Means 1852 - 1962

Substitute the following values for those printed:

Plot	Grain	Straw
5.0	8.8	10.1
1AA	12.4	
2AA	19.9	
3AA	13.0	
4AA	19.6	
1AAS	15.5	
2AAS	20.6	
3AAS	16.2	
4AAS	21.1	
1N	14.2	
2N	16.5	19.6

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65/A/2.2

SUMMARY OF RESULTS

Plot	GRAIN PA	GRAIN MB	GRAIN Mean	STRAW PA	STRAW MB	STRAW Mean
1 O	9.1	7.4	8.2	6.5	2.9	4.7
2 O	11.6	11.3	11.4	6.8	4.8	5.8
3 O	10.6	8.9	9.8	7.4	6.3	6.9
4 O	14.3	10.5	12.4	9.7	5.2	7.5
5 O	13.9	9.2	11.6	10.0	7.1	8.6
1 A	12.5	14.4	13.5	10.1	9.7	9.9
2 A	23.2	27.7	25.5	17.2	26.1	21.7
3 A	18.9	27.2	23.1	18.4	24.8	21.6
4 A	27.0	38.5	32.8	21.8	33.2	27.5
5 A	31.0	37.5	34.2	31.2	39.9	35.5
1 AA	13.0	12.2	12.6	11.8	12.4	12.1
2 AA	26.6	34.1	30.4	24.5	36.6	30.5
3 AA	16.8	21.9	19.3	19.5	22.6	21.1
4 AA	29.8	35.1	32.4	30.7	52.6	41.6
1 AAS	20.1	18.6	19.3	19.7	17.1	18.1
2 AAS	23.9	30.6	27.2	20.9	28.6	24.8
3 AAS	23.2	32.6	27.9	24.6	33.8	29.2
4 AAS	31.2	35.3	33.3	28.1	40.3	34.2
1 C	22.2	32.7	27.5	18.1	21.5	19.8
2 C	25.5	37.3	31.4	19.6	28.2	23.9
3 C	23.9	36.5	30.2	19.0	27.1	23.0
4 C	29.5	35.3	32.4	24.6	29.3	26.9
7 - 1	16.5	11.5	14.0	11.7	8.6	10.1
7 - 2	36.7	44.9	40.8	38.6	42.8	40.7
6 - 1	9.8	7.2	8.5	6.6	5.0	5.8
6 - 2	12.9	7.7	10.3	7.6	5.6	6.6
1 N	13.3	9.7	11.5	19.2	23.7	21.4
2 N	23.8	29.3	26.5	21.9	28.0	24.9
Mean	20.4	23.8	22.1	18.0	22.3	20.2
Mean D.M. %:		72.8			79.1	

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65/A/3

WHEAT AFTER FALLOW - HOOSFIELD 1965

(HWF)

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

Area of each plot: Squarehead's Master (SM) 13/4 - 0.0690.
Cappelle (C) - 0.0552. Area harvested: 0.0368.

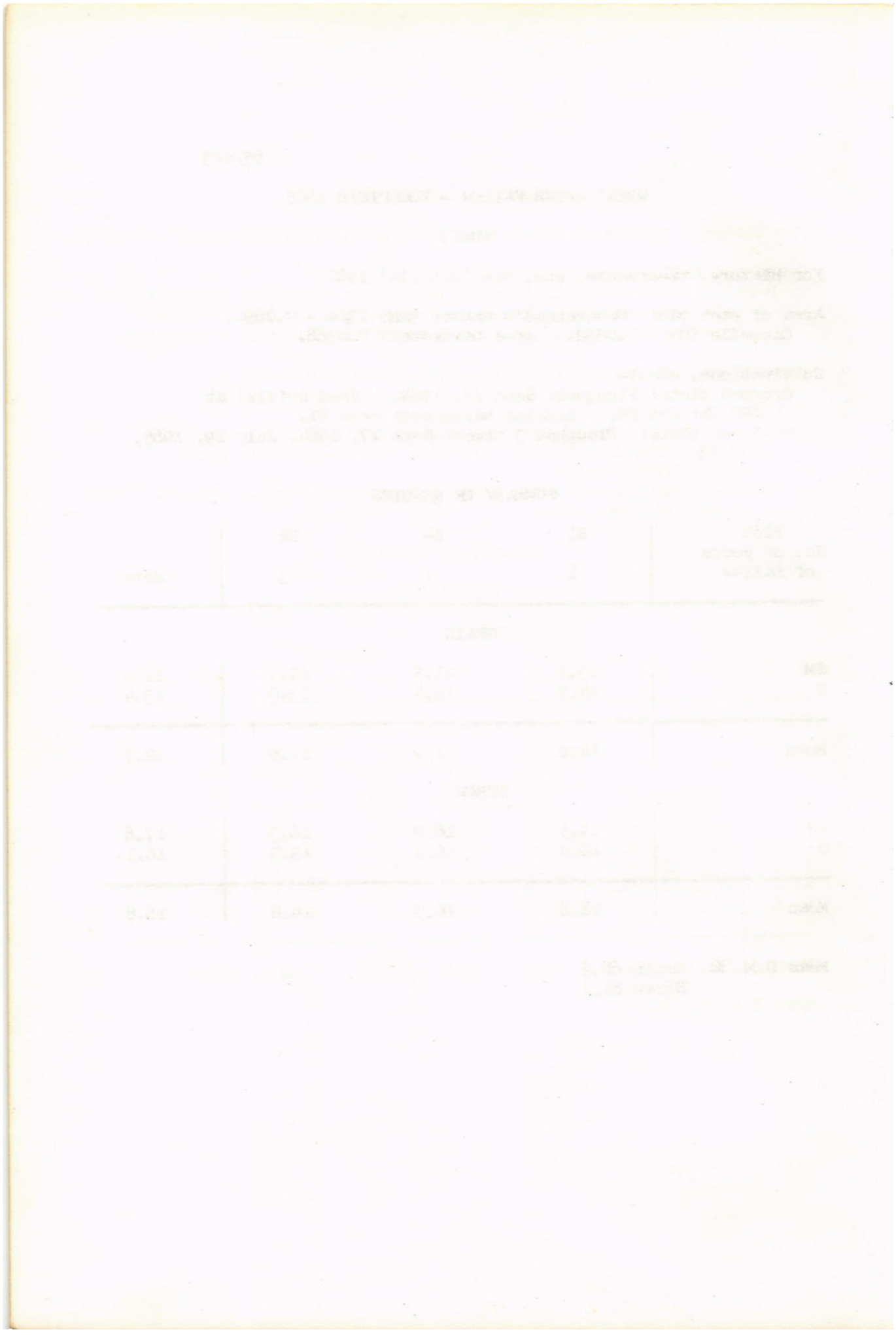
Cultivations, etc.:-
Cropped plots: Ploughed: Sept 17, 1964. Seed drilled at 190 lb: Oct 26. Combine harvested: Sept 21.
Fallowed plots: Ploughed 3 times: Sept 17, 1964, July 19, 1965, Aug 13.

SUMMARY OF RESULTS

Plot No. of years of fallow	B1 1	B4 1	B2 3	Mean
		GRAIN		
SM	13.7	11.5	10.7	11.9
C	14.7	12.4	13.0	13.4
Mean	14.2	11.9	11.8	12.7
		STRAW		
SM	19.5	16.9	16.3	17.6
C	18.0	16.9	13.3	16.1
Mean	18.8	16.9	14.8	16.8

Mean D.M. %: Grain 68.2
Straw 81.4

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GRASS - AGDELL 1965

For history, treatments etc., see 'Details' 1962 and 'Results' 64/A/4.1.

Grass and fallow areas:-
Residual effects of old P and K treatments and of those applied in 1964 were tested. No manures were applied except a basal dressing to grass of 0.8 cwt N as 'Nitro-Chalk' for each cut.

Area of each microplot: 0.0180. Area harvested: 0.0023.

Cultivations, etc.:-
Grass: 'Nitro-Chalk' applied: Apr 1, 1965. Cut 3 times for silage: May 19, July 26, Oct 6. 'Nitro-Chalk' applied after first 2 cuts.
Fallow: Ploughed: Oct 19, 1964. Rotary cultivated: June 30, 1965. Chisel ploughed: Aug 6.

SUMMARY OF RESULTS

DRY MATTER

Plot

P	K	5	6	3	4	1	2	Mean
				1ST CUT				
0	4	14.3	4.4	34.5	23.3	40.3	34.0	25.1
1	4	33.1	36.6	40.4	28.1	41.0	36.3	35.9
2	4	34.8	41.5	37.0	30.4	42.9	36.3	37.1
4	4	35.3	39.3	40.1	30.9	44.3	39.5	38.2
4	0	36.7	36.2	35.2	34.4	37.4	36.5	36.1
4	1	36.2	35.6	39.9	37.8	33.6	36.9	36.7
4	2	33.0	39.0	36.3	34.2	37.7	36.6	36.1
4	4	34.7	33.7	34.8	37.0	39.7	43.4	37.2
Mean		32.3	33.3	37.3	32.0	39.6	37.4	35.3

Mean D.M. %: 14.1

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65/A/4.2

DRY MATTER

Plot

P	K	5	6	3	4	1	2	Mean
				2ND CUT				
0	4	54.2	39.1	29.2	36.3	41.1	31.0	38.5
1	4	37.4	33.5	33.6	28.0	44.9	39.7	36.2
2	4	31.7	30.7	35.8	28.0	38.8	35.8	33.5
4	4	38.1	35.4	35.0	31.6	44.2	31.6	36.0
4	0	34.5	31.2	26.4	30.9	38.7	28.6	31.7
4	1	34.3	30.3	37.2	28.7	41.2	37.8	34.9
4	2	28.3	24.8	35.6	32.7	32.3	30.2	30.7
4	4	33.1	33.2	40.6	28.8	36.8	33.2	34.3
Mean		36.5	32.3	34.2	30.6	39.7	33.5	34.5
				3RD CUT				
0	4	14.6	13.1	22.1	24.5	27.1	27.1	21.4
1	4	22.7	28.5	29.9	24.5	27.8	22.9	26.1
2	4	28.9	25.6	23.1	26.9	27.2	25.6	26.2
4	4	26.1	27.3	27.1	26.1	28.5	26.4	26.9
4	0	17.6	23.0	25.0	23.6	21.0	22.2	22.1
4	1	25.2	26.2	27.6	29.1	22.3	23.4	25.6
4	2	26.0	26.5	28.4	28.3	26.6	27.1	27.1
4	4	25.4	26.0	27.5	27.6	30.2	27.4	27.4
Mean		23.3	24.5	26.4	26.3	26.3	25.2	25.4

Mean D.M. %: 2nd cut: 19.2
3rd cut: 21.0

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65/A/4.3

DRY MATTER

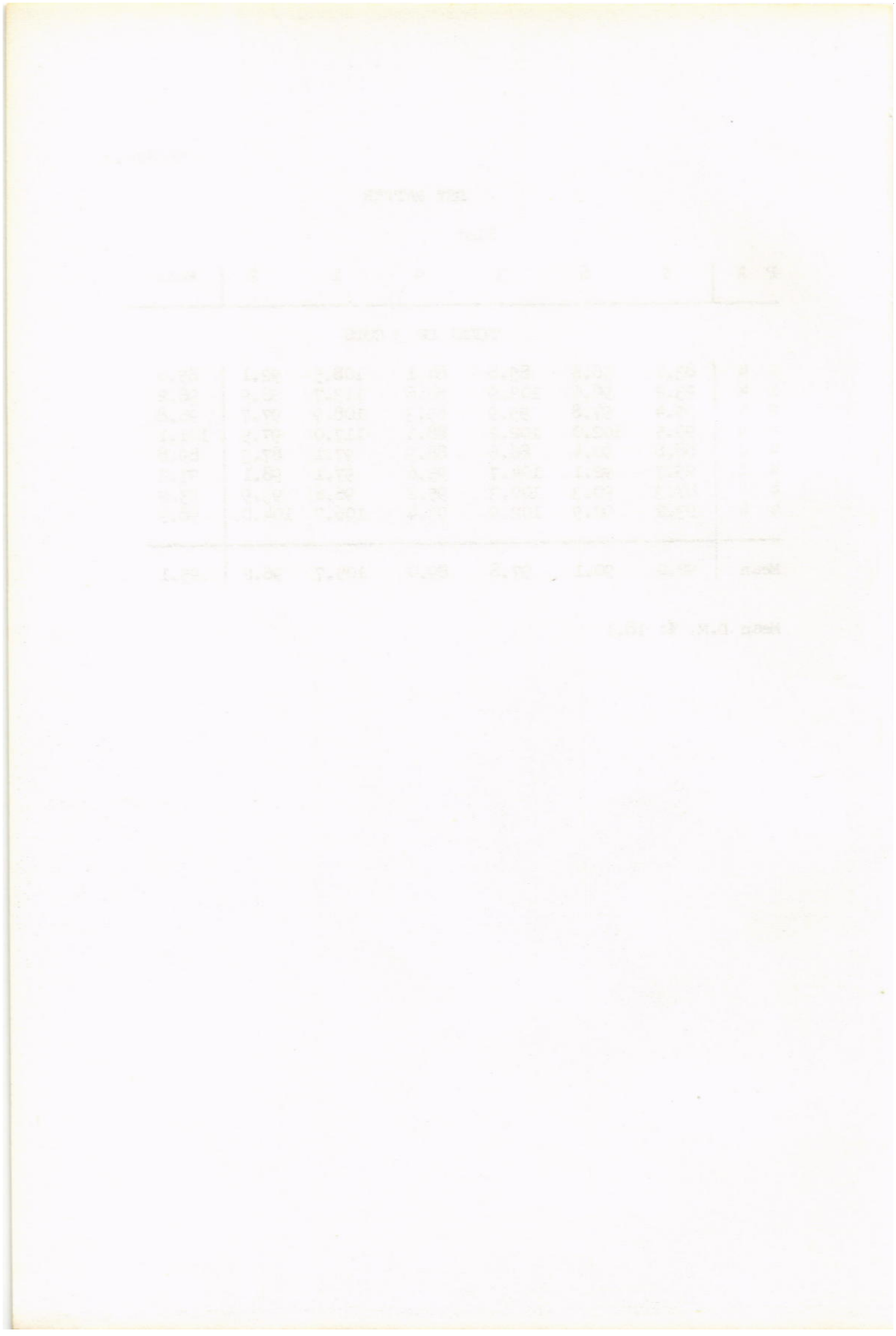
Plot

P	K	5	6	3	4	1	2	Mean
				TOTAL OF 3 CUTS				
0	4	83.1	56.6	85.8	84.1	108.5	92.1	85.0
1	4	93.2	98.6	103.9	80.6	113.7	98.9	98.2
2	4	95.4	97.8	95.9	85.3	108.9	97.7	96.8
4	4	99.5	102.0	102.2	88.6	117.0	97.5	101.1
4	0	88.8	90.4	86.6	88.9	97.1	87.3	89.8
4	1	95.7	92.1	104.7	95.6	97.1	98.1	97.2
4	2	87.3	90.3	100.3	95.2	96.6	93.9	93.9
4	4	93.2	92.9	102.9	93.4	106.7	104.0	98.9
Mean		92.0	90.1	97.8	89.0	105.7	96.2	95.1

Mean D.M. %: 18.1

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65/A/5

FALLOW - BARNFIELD 1965

(BN)

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

The experiment was fallowed. Mineral fertilisers and dung were applied as before 1964, but nitrogen and castor meal were not applied.

Cultivations, etc.: Dung applied, all plots ploughed: Nov 9, 1964. Mineral fertilisers applied: May 14, 1965. Rotary cultivated: May 17. Ploughed second time: July 21 - Aug 4.

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65/A/6.1

HAY - THE PARK GRASS PLOTS 1965

(PG)

The 110th year

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

Liming: All plots (excluding 5-1, 5-2, 6, 12, 15, 18-2 and all of plots 19 and 20) are divided into 4 sub-plots each, and ground chalk is applied in such a way as to establish and maintain the following reactions per sub-plot:-

	South		North	
Old scheme	Limed		Unlimed	
Sub-plot	a	b	c	d
ph existing ph		6	5	maximum acidity

Plot 18-1 and 3 are divided into a,b and c,d (a at the Eastern end).

In 1965 ground chalk was applied to sub-plots as follows (tons $CaCO_3$):-

Plot	Sub-plot b	Sub-plot c
1	-	2.5
4-2	1.0	4.5
9	2.0	3.5
10	1.0	4.0
11-1	5.0	4.0
11-2	3.0	4.0
13	-	1.0
18-1	-	2.0

Area of each sub-plot:*

Plot		Area harvested
1	0.048	0.0070
2,3		0.0088
4-1,4-2		0.0093
11-1 and 11-2	0.061	0.0094
7,8,9,10 and 13	0.123	0.0189
14,16 and 17	0.040	0.0057
18	0.081	0.0210

Microplots: Experiments using microplots are now in progress on the following plots:-

5-1 and 5-2 (Effects of NPK on old grass) (see 65/22)
6 (Effects of N levels on old grass) (see 65/22)

Cultivations, etc.: Dung applied to appropriate plots: Nov 10, 1964. Mineral fertilisers applied: Nov 27. Ground chalk applied: Jan 6, 1965. Nitrogenous fertilisers applied: 1st dressing: Mar 10, 2nd dressing: Apr 13. Cut twice: June 28 and Dec 3.

* The lengths harvested on sub-plots a, b, c and d varied slightly. The areas given are averages.

SUMMARY OF RESULTS

DRY MATTER

Plot No	1st cut a	b	c	d	Mean	2nd cut a	b	c	d	Mean	Total of 2 cuts a	b	c	d	Total
1	22.8	17.0	21.9	17.9	19.9	10.0	5.1	5.2	7.3	6.9	32.8	22.1	27.1	25.2	26.8
2	20.6	22.6	23.4	21.3	21.9	6.7	5.9	7.8	6.0	6.6	27.3	28.5	31.2	27.3	28.6
3	23.4	21.9	22.1	21.9	22.3	5.7	4.9	7.0	7.1	6.2	29.1	26.8	29.2	29.0	28.5
4-1	28.0	28.5	29.0	32.6	29.5	13.5	10.7	14.3	15.6	13.5	41.5	39.2	43.3	48.2	43.1
4-2	34.9	33.9	40.0	37.5	36.6	11.6	7.2	7.4	9.7	9.0	46.5	41.1	47.5	47.2	45.6
7	44.3	45.0	41.8	34.5	41.4	17.7	17.4	21.0	17.4	18.4	62.1	62.4	62.8	51.9	59.8
8	31.1	31.4	37.8	37.1	34.3	11.1	11.0	16.3	16.5	13.7	42.2	42.3	54.1	53.6	48.1
9	51.5	47.8	50.7	56.3	51.6	19.5	13.0	6.5	8.4	11.8	71.0	60.8	57.2	64.7	63.4
10	38.5	38.2	44.0	41.9	40.6	17.8	12.8	5.8	10.7	11.8	56.2	51.0	49.8	52.6	52.4
11-1	60.9	55.4	57.4	50.5	56.1	23.8	20.3	17.6	29.5	22.8	84.8	75.8	75.1	80.0	78.9
11-2	62.3	61.7	61.6	49.9	58.9	25.3	24.6	12.5	28.1	22.6	87.6	86.3	74.1	78.0	81.5
12	28.7		27.5		28.1	19.1		13.5		16.3	47.7		41.1		44.4
13	40.2	47.4	47.3	45.8	45.2	24.0	28.6	35.1	30.3	29.5	64.2	76.0	82.4	76.1	74.7
14	43.4	50.4	46.9	42.7	45.9	10.9	11.5	16.1	17.8	14.1	54.3	61.9	63.1	60.5	59.9
15	36.7		32.7		34.7	17.0		14.5		15.7	53.7		47.2		50.4
16	43.3	43.4	44.4	36.6	41.9	15.2	16.3,	20.1	16.7	17.1	58.5	59.7	64.6	53.2	59.0
17	24.2	26.0	29.8	30.3	27.6	11.4	12.1	18.7	13.3	13.9	35.6	38.1	48.4	43.6	41.4
18-1			19.5	15.2	17.4			14.5	12.8	13.7			34.1	28.0	31.0
18-2					27.2					9.7					36.9
18-3	28.6	31.6			30.1	10.8	12.1			11.4	39.4	43.7			41.5
19-1					44.4					30.1					74.5
19-2					42.1					22.6					64.7
19-3					44.7					26.7					71.3
20-1					46.6					33.9					80.5
20-2					44.9					33.9					78.8
20-3					42.1					30.3					72.4

Mean D.M. %: 1st crop: 25.7 2nd crop: 23.5

65/A/6.2

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65/A/7

BARLEY - EXHAUSTION LAND HOOSFIELD 1965

(EX)

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

The crop grew unevenly on the plots with residues of P and FYM, regularly spaced strips of good and poor growth ran diagonally across these plots.

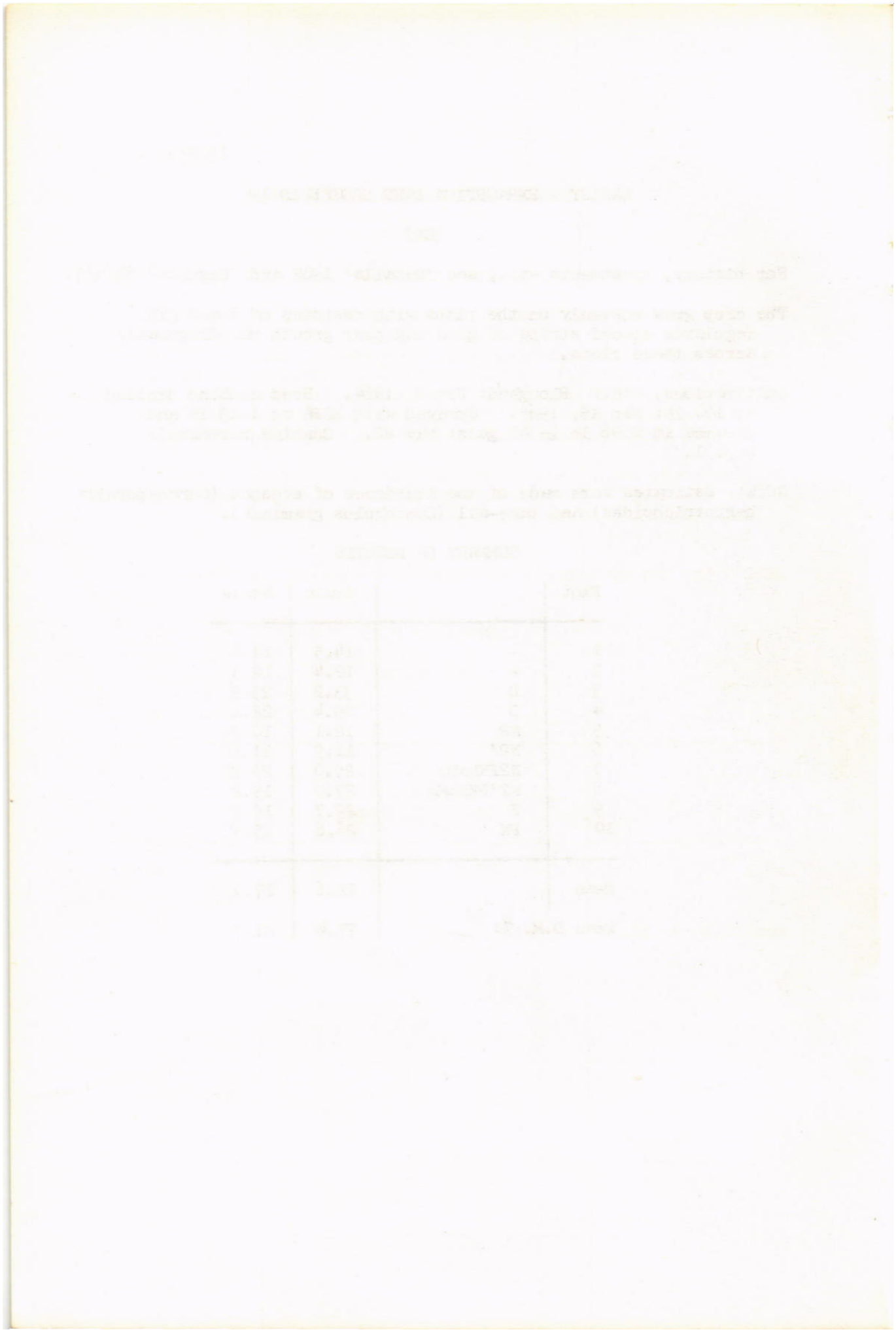
Cultivations, etc.: Ploughed: Nov 2, 1964. Seed combine drilled at 160 lb: Mar 15, 1965. Sprayed with MCPA at 1.13 lb and dicamba at 0.08 lb in 40 gals: May 22. Combine harvested: Sept 1.

NOTE: Estimates were made of the incidence of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis).

SUMMARY OF RESULTS

Plot		Grain	Straw
1	-	14.5	14.6
2	-	12.4	12.5
3	D	33.2	25.9
4	D	29.4	22.1
5	N2	12.1	10.0
6	N2'	11.9	11.1
7	N2PKNaMg	29.0	20.2
8	N2'PKNaMg	27.0	19.2
9	P	29.7	19.2
10	PK	26.8	15.5
Mean		22.6	17.0
Mean D.M. %:		77.4	81.7

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65/A/8

CLOVER - ROTHAMSTED GARDEN 1965

(GC)

The 112th year

For history etc. see 'Details' 1962.

In 1965 each of the existing half plots was divided for a test of formalin - none (0) v a 38% solution of formaldehyde at 266 gals in 3700 gals (F). Sub-plots not treated with formalin received an equivalent amount of water. All sub-plots were covered with polythene sheeting from Apr 14 to Apr 27.

Cultivations, etc.: Soil loosened with forks, formalin applied: Apr 14, 1965. K applied, seed drilled at 30 lb: May 27. Cut: Oct 13. Variety: Red Clover (Dorsetiensis) - inoculated seed.

NOTE: Dry matter samples were taken for chemical analysis.

SUMMARY OF RESULTS

DRY MATTER

	0	F	Mean
K0	7.9	19.5	13.7
K2	28.3	24.4	26.4
Mean	18.1	22.0	20.0

Mean D.M. %: 18.3

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65/A/9

FALLOW AND MUSTARD, SITES OF CONTINUOUS WHEAT AND BARLEY EXPERIMENTS

WOBURN STACKYARD 1965

(WPW and WPB)

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

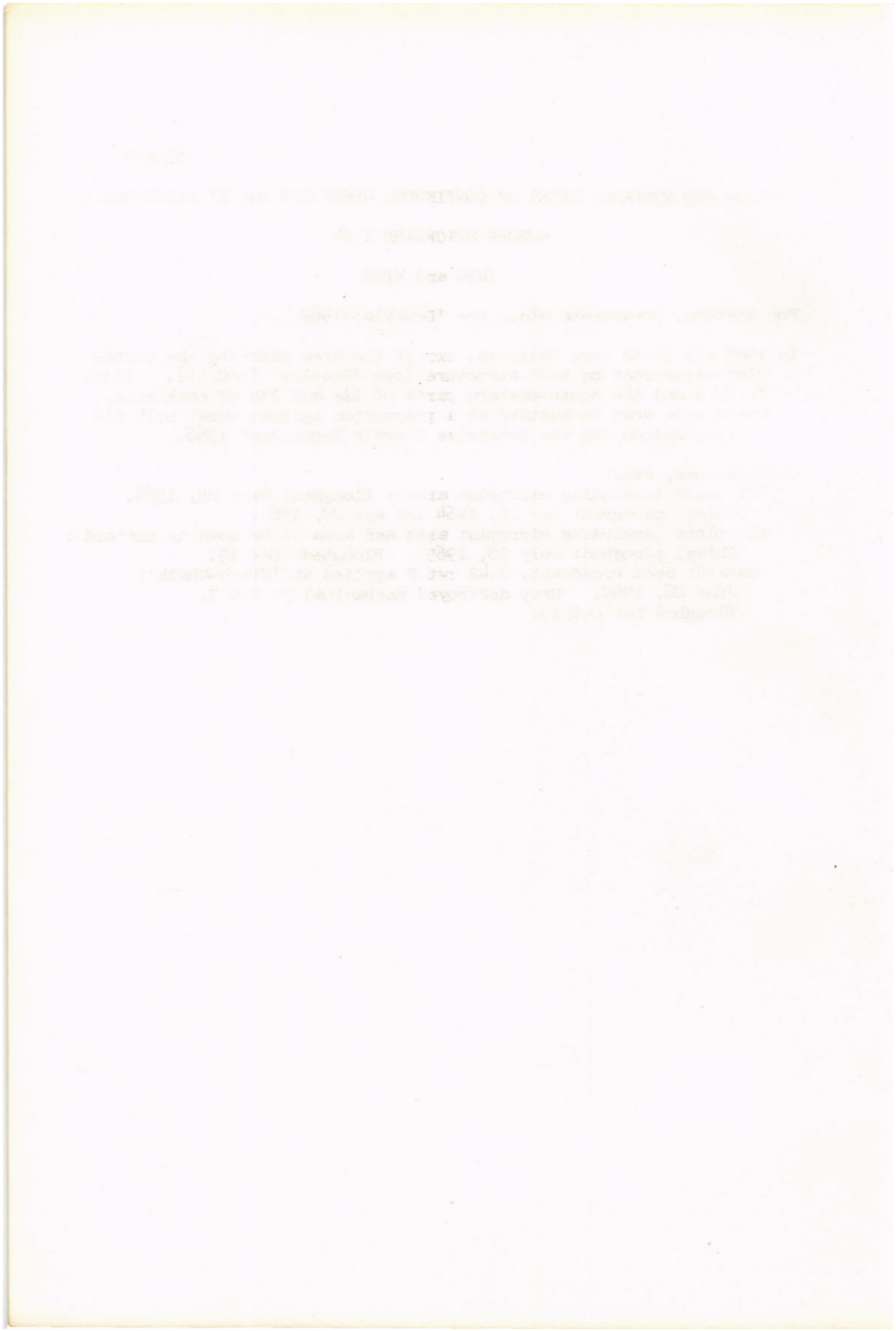
In 1965 all plots were fallowed, except the area carrying the micro-plot experiment on soil structure (see 'Results' 65/C/19). Plots 7, 8, 9 and the south-eastern parts of 11a and 11b of each site, which were sown to mustard as a precaution against wheat bulb fly in preparation for the Intensive Cereals Experiment 1966.

Cultivations, etc.:

All plots (excluding microplot area): Ploughed: Sept 29, 1964.
Chisel ploughed: Dec 16, 1964 and Apr 27, 1965.
All plots (excluding microplot area and area to be sown to mustard):
Chisel ploughed: July 28, 1965. Ploughed: Oct 13.
Mustard: Seed broadcast, 0.42 cwt N applied as 'Nitro-Chalk':
June 28, 1965. Crop destroyed mechanically: Oct 7.
Ploughed in: Oct 13.

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65/A/10.1

SAXMUNDHAM

ROTATION I 1965

(SA)

For history, treatments, rotations etc. see Rothamsted Report for 1964, pp. 228-232 and 'Results' 64/A/10.

The rotation is now sugar beet, barley, fallow, winter wheat. Manures are applied as hitherto, but the fallow receives dung, bonemeal, P and K but no nitrogen.

Area of each plot: 0.0546. Area harvested: Wheat and barley - 0.0275, sugar beet - 0.0107.

Cultivations, etc.:-

Sugar beet: Dung applied: Sept 21, 1964. Ploughed: Nov 10. Bonemeal, superphosphate and muriate of potash applied: Mar 17, 1965. Seed drilled: Apr 7. DDT applied: May 7. Singled: May 15 - 29. Nitrate of soda applied: May 17. Lifted: Oct 18. Variety: Klein E.

Barley: Dung applied: Nov 3, 1964. Ploughed: Nov 16. Bonemeal, superphosphate and muriate of potash applied: Mar 15, 1965. Seed drilled at 150 lb: Mar 30. Sprayed with hormonal weedkiller: May 12. Nitrate of soda applied: May 17. Combine harvested: Aug 31. Variety: Proctor.

Fallow: Dung applied: Sept 22, 1964. Ploughed: Nov 14. Bonemeal, superphosphate and muriate of potash applied: Apr 3, 1965. Ploughed 3 times: Apr 5, June 3 and July 19 - 31.

Winter wheat: Ploughed: July 28 - Aug 20, 1964. Dung applied and ploughed in: Sept 18. Bonemeal, superphosphate and muriate of potash applied, seed drilled at 160 lb: Nov 6. Nitrate of soda applied: Mar 6, 1965. Sprayed with hormonal weedkiller: May 12. Combine harvested: Aug 31. Variety: Cappelle.

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65/A/10.2

SUMMARY OF RESULTS

Former plot no.	Treatment 1965	Sugar beet Roots	Sugar %	Total sugar	Tops	Plant Number	Barley Grain	Barley Straw	Wheat Grain	Wheat Straw
1	D	13.88	18.4	51.0	9.31	42.3	23.2	10.7	29.4	18.1
2	B	9.96	18.4	36.6	3.20	34.9	9.8	3.0	20.9	11.1
3	N	2.88	17.3	10.0	2.24	23.3	12.4	5.3	24.6	12.7
4	P	7.55	18.8	28.4	2.62	33.7	5.4	1.3	15.9	9.8
5	K	2.42	18.0	8.7	1.25	21.3	3.7	0.7	13.9	9.4
6	0	1.41	16.6	4.7	1.66	21.6	6.4	2.1	18.2	11.8
7	PK	6.79	18.9	25.6	1.91	26.8	5.9	0.6	16.9	10.2
8	NK	0.89	15.8	2.8	1.29	18.2	8.8	2.0	26.5	10.0
9	NP	10.23	18.7	38.2	3.07	29.7	23.6	10.4	24.3	10.5
10	NPK	11.00	18.8	41.4	3.12	30.4	21.2	7.6	24.8	13.2
Mean		6.70	18.0	24.7	2.97	28.2	12.0	4.4	21.5	11.7
Mean D.M.%:							81.3	80.6	78.9	76.8

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65/A/11.1

SAXMUNDHAM

ROTATION II 1965

(SB)

For history, treatments, rotations etc. see Rothamsted Report for 1964 pp. 228-232 and 'Results' 64/A/10.

All plots, including plot 8 (the treatment of which was discontinued after 1952) were sown to barley, which was manured as follows:-

Plots 1, 2, 3, 4 and 8: No P (P0)
Plots 5 and 6: 1.5 cwt P_2O_5 (P1)
Plot 7: 3.0 cwt P_2O_5 (P2)

All P_2O_5 as superphosphate.

Basal manuring: 100 lb N and 200 lb K as 'Nitro-Chalk' and muriate of potash.

Area of each plot: 0.0545. Area harvested: 0.0148.

Cultivations, etc.: Ploughed: Oct 28 - Nov 18, 1964. Fertilisers applied: Mar 30, 1965. Seed drilled at 150 lb: Apr 1. Sprayed with hormonal weedkiller: May 12. Combine harvested: Aug 31. Variety: Proctor.

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65/A/11.2

SUMMARY OF RESULTS

BARLEY, GRAIN

Plot no.	Treatment 1965	
1	P0	15.9
2	P0	31.3
3	P0	34.6
4	P0	34.2
5	P1	34.3
6	P1	34.1
7	P2	33.2
8	P0	31.4
Mean		31.1

Mean D.M. %: 79.9

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65/B/1.1

LEY AND ARABLE ROTATIONS

(HIA and FIA)

Highfield and Fosters Field 1965, the 17th year.

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

Winter wheat: A further test of 0 v 0.6 N (T0 v T1) is now applied as 'Nitro-Chalk' in December or early January. The 1965 crop received additional K20 at 0.6 cwt on the plough furrow, as muriate of potash.

Potatoes: All fertiliser tests on potatoes are discontinued, except the comparison of dung and PK (0.5 cwt P205, 1.0 cwt K20 as (0:14:28)) on quarter plots. The basal compound is now (15:15:15) applied at 1.2 cwt N, 1.2 cwt P205 and 1.2 cwt K20.

Sugar beet: The N test is discontinued. The basal nitrogen is 1.5 cwt N, partly applied in the basal compound (now 15:15:15) and partly as 'Nitro-Chalk'.

Hay: This is no longer undersown. Italian ryegrass is sown in autumn or spring. The manuring remains the same but the basal NPK is applied in the seedbed (for spring sowing) or in early spring (for autumn sowing).

Lucerne: An infestation with stem eelworm (Ditylenchus dipsaci) made it necessary to plough out one whole plot of third year lucerne on each field.

NOTES: (1) The wheat following ryegrass (replacing 3rd year 'all-grass' ley) on Fosters was badly thinned in spring by stem-boring larvae.

(2) Weather prevented the last cutting planned for 1st and 2nd year all-grass and clover-grass leys, also permanent and reseeded grasses.

Cultivations, etc.:

HIGHFIELD

1st year Treatment Crops:

All-grass ley: Ploughed: Oct 16, 1964. Basal PK compound applied: Apr 5, 1965. Seeds sown at 30 lb, 'Nitro-Chalk' applied: Apr 6. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 2. Cut 3 times: July 2, Aug 5, Sept 9. NK compound applied after each cut.

Clover-grass ley: Ploughed: Oct 16, 1964. Basal PK compound applied: Apr 5, 1965. Seeds sown at 33 lb: Apr 6. Sprayed

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with MCPA/MCPB (Tropotox Plus at 4 pints in 40 gals): June 2. Cut 3 times: July 2, Aug 5, Sept 9. Muriate of potash applied after each cut.

Lucerne: Ploughed: Oct 16, 1964. Basal PK compound applied: Apr 5, 1965. Seed drilled at 20 lb: Apr 6. Cut 3 times: July 9, Sept 7, Nov 3.

Hay: Ploughed (undersown seeds having failed): Oct 22, 1964. Basal NPK compound applied, seeds sown at 38.5 lb: Apr 6, 1965. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 2. Cut twice: July 2, Aug 5. NK compound applied after first cut.

2nd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied: Apr 9, 1965. Cut 4 times: May 20, July 1, Aug 5, Sept 9. NK compound applied after each cut.

Clover-grass ley: Basal PK compound applied: Nov 26, 1964. Cut 4 times: May 21, July 1, Aug 5, Sept 9. Muriate of potash applied after each cut.

Lucerne: Basal PK compound applied: Nov 26, 1964. Sprayed with paraquat at 2 lb ion in 44 gals: Feb 25, 1965. Cut four times: May 25, July 9, Sept 7, Nov 3.

Sugar beet: Ploughed: July 27, 1964. Muriate of potash applied: Feb 11, 1965. Basal NPK compound applied: Apr 1. 'Nitro-Chalk' applied, plots rotary cultivated, seed drilled at 5.25 lb: Apr 2. Singled: May 20. Sprayed with menazon (Saphicol at 0.75 pints in 37 gals): July 1. Lifted: Nov 16.

3rd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied: Apr 9, 1965. Cut 4 times: May 21, July 1, Aug 5, Sept 9. NK compound applied after first 3 cuts.

Clover-grass ley: Basal PK compound applied: Nov 26, 1964. Cut 4 times: May 21, July 1, Aug 5, Sept 9, 1965. Muriate of potash applied after first 3 cuts.

Lucerne: Basal PK compound applied: Nov 26, 1964. Sprayed with paraquat at 2 lb ion in 44 gals: Feb 25, 1965. Plots 107 and 108 cut and ploughed up (no yields taken): May 6 and reploughed: July 21. Cut 3 times: May 25, July 9, Sept 6.

Oats: Ploughed: Nov 30, 1964. Seed combine drilled at 170 lb, 'Nitro-Chalk' applied: Mar 15, 1965. Sprayed with MCPA at 1.13 lb and dicamba at 0.08 lb in 40 gals: May 19. Combine harvested: Aug 28.

1st Test Crop, Wheat:-

Ploughed: Oct 21, 1964. Additional K fertiliser applied: Oct 28. Seed combine drilled at 170 lb: Oct 30. 'Nitro-Chalk' applied: Dec 18, spring dressing: Apr 14, 1965. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 23. Combine

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harvested: Sept 12.

2nd Test Crop, Potatoes:-
Dung applied, plots ploughed: Nov 5, 1964. Fertilisers applied: Apr 21, 1965. Plots rotary cultivated, potatoes machine planted: Apr 23. Earthed up: June 14. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: June 30, July 27, Aug 10. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 6. Haulm destroyed mechanically: Sept 14. Lifted: Oct 20.

3rd Test Crop, Barley:-
Ground chalk applied: Sept 28, 1964. Additional ('balancing') P and K applied: Oct 5. Ploughed: Oct 8. 'Nitro-Chalk' applied: Feb 18, 1965. Seed combine drilled at 140 lb: Mar 15. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 11. Combine harvested: Sept 6.

Permanent grasses: 15th, 16th and 17th experimental years permanent (old) grass, all blocks, 15th, 16th and 17th years reseeded grass, blocks 1, 4, 6, 7, 9 and 12. Ground chalk applied to blocks 10 and 11: Nov 11, 1964. Basal PK compound applied: Nov 26. 'Nitro-Chalk' applied to 'all-grass' half plots: Apr 9, 1965. Cut four times: May 21, July 2, Aug 5, Sept 10 (reseeded), Sept 27 (old). Muriate of potash and NK compound applied to appropriate half plots after each cut.

FOSTERS

1st year Treatment Crops:-
All-grass ley: Ploughed: Oct 15, 1964. Basal PK compound applied: Apr 5, 1965. Seed sown at 30 lb, 'Nitro-Chalk' applied: Apr 6. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 2. Cut 3 times: July 6, Aug 4, Sept 9. NK compound applied after each cut.
Clover-grass ley: Ploughed: Oct 15, 1964. Basal PK compound applied: Apr 5, 1965. Seed sown at 33 lb: Apr 6. Sprayed with MCPB/MCPA (Tropotox plus at 4 pints in 40 gals): June 2. Cut 3 times: July 6, Aug 4, Sept 9. Muriate of potash applied after each cut.
Lucerne: Ploughed: Oct 15, 1964. Basal PK compound applied: Apr 5, 1965. Seed sown at 20 lb: Apr 6. Cut 3 times: July 9, Sept 6, Nov 2.
Hay: Ploughed (undersown seeds having failed): Oct 22, 1964. Basal NPK compound applied, seed sown at 38.5 lb: Apr 6, 1965. Sprayed with 2,4-D butoxyethylester at 0.44 lb in 40 gals: June 2. Cut twice: July 1, Aug 6. NK compound applied after first cut.

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2nd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied: Apr 9, 1965. Cut 4 times: May 20, July 1, Aug 4, Sept 9. NK compound applied after each cut.

Clover-grass ley: Basal PK compound applied: Nov 26, 1964. Cut 4 times: May 20, July 1, Aug 4, Sept 9, 1965. Muriate of potash applied after each cut.

Lucerne: Basal PK compound applied: Nov 26, 1964. Sprayed with paraquat at 2 lb ion in 44 gals: Feb 25, 1965. Cut 4 times: May 25, July 9, Sept 6, Nov 2.

Sugar beet: Ploughed: July 27, 1964. Muriate of potash applied: Feb 11, 1965. Basal NPK compound applied: Apr 1. 'Nitro-Chalk' applied, plots rotary cultivated, seed drilled at 5.25 lb: Apr 2. Singled: May 25. Sprayed with menazon (Saphicol at 0.75 pints in 37 gals): July 1. Lifted: Nov 16.

3rd year Treatment Crops:-

All-grass ley: Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied: Apr 9, 1965. Cut 4 times: May 20, July 1, Aug 5, Sept 9. NK compound applied after first 3 cuts.

Clover-grass ley: Basal PK compound applied: Nov 26, 1964. Cut 4 times: May 20, July 1, Aug 5, Sept 9, 1965. Muriate of potash applied after first 3 cuts.

Lucerne: Basal PK compound applied: Nov 26, 1964. Sprayed with paraquat at 2 lb ion in 44 gals: Feb 25, 1965. Plots 51 and 52 cut and ploughed up (no yields taken): May 6 and reploughed: July 21. Cut 3 times: May 25, July 9, Sept 6.

Oats: Ploughed: Nov 30, 1964. Seed drilled at 170 lb: Mar 15, 1965. 'Nitro-Chalk' applied: Mar 16. Sprayed with MCPA at 1.13 lb and dicamba at 0.08 lb in 40 gals: May 19. Combine harvested: Aug 28.

1st Test Crop, Wheat:-

Ploughed: Oct 21, 1964. Additional K fertiliser applied: Oct 27. Seed combine drilled at 170 lb: Oct 30. 'Nitro-Chalk' applied: Dec 18, spring dressing: Apr 14, 1965. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 23. Combine harvested: Sept 12.

2nd Test Crop, Potatoes:-

Dung applied, plots ploughed: Nov 4, 1964. Fertilisers applied: Apr 21, 1965. Rotary cultivated, potatoes machine planted: Apr 22. Earthed up: June 14. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: July 1, July 27, Aug 10. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 6. Haulm destroyed mechanically: Sept 14. Lifted: Oct 19.

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3rd Test Crop, Barley:-
Additional ('balancing') P and K applied: Oct 5, 1964. Ploughed: Oct 8. 'Nitro-Chalk' applied: Feb 18, 1965. Seed combine drilled at 140 lb: Mar 15. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 11. Combine harvested: Sept 2.

Permanent grasses:-
15th, 16th and 17th years reseeded grass, blocks 1, 3, 6, 8, 9 and 11. Basal PK compound applied: Nov 26, 1964. 'Nitro-Chalk' applied to 'all-grass' half plots: Apr 9, 1965. Cut 4 times: May 20, July 1, Aug 4, Sept 10. Muriate of potash and NK compound applied to appropriate half plots after each cut.

Standard errors, per sub plot. Test crops.
Potatoes. Total tubers:

Highfield:	Whole plot:	1.309 or 6.2%	(4 d.f.)
	Sub plot:	1.783 or 8.4%	(15 d.f.)
Fosters:	Whole plot:	0.921 or 4.6%	(4 d.f.)
	Sub plot:	1.818 or 9.2%	(15 d.f.)

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65/B/1.6

SUMMARY OF RESULTS

WHEAT 1ST TEST CROP

1962 - 1964

	Lu	LC	LN	AH	R	Mean
GRAIN						
HIGHFIELD						
Mean	43.5	46.5	48.9	47.1	49.6	47.1
To test crop						
N0	43.6	44.9	47.7	40.9	50.3	
N1	45.9	48.1	51.5	50.2	49.2	
N2	42.2	46.4	48.4	49.1	48.7	
N3	42.4	46.8	48.1	48.0	50.0	
T0	47.6	46.1	49.5	47.3	50.0	48.1
T1	39.5	47.0	48.4	46.8	49.1	46.1
FOSTERS						
Mean	50.2	48.0	43.2	46.0	47.4	47.0
To test crop						
N0	48.4	46.1	42.4	36.5	47.6	
N1	53.0	50.8	44.5	46.9	48.9	
N2	49.7	48.6	43.6	50.0	45.7	
N3	49.6	46.6	42.3	50.6	47.4	
T0	50.3	48.1	42.1	43.5	46.8	46.2
T1	50.0	48.0	44.2	48.5	48.0	47.7

Mean D.M. %: Highfield 74.2
Fosters 75.9

NOTES: (1) In the 1964 tables wheat only, the order of rotations is different from that above. In future the order will be as above i.e. Lu LC LN AH R.
(2) N levels are different on AH from remainder see 64/B/1.23.

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65/B/1.7

WHEAT 1ST TEST CROP

1962 - 1964

	Lu	LC	LN	AH	R	Mean
			STRAW			
			HIGHFIELD			
Mean	48.1	43.5	48.4	39.9	54.3	46.8
To test crop						
N0	49.0	37.8	42.4	34.3	51.9	
N1	49.9	45.7	52.6	43.5	57.6	
N2	46.7	42.9	51.1	40.5	53.3	
N3	47.0	47.5	47.4	41.2	54.5	
T0	47.7	39.9	47.0	37.6	52.0	44.8
T1	48.6	47.1	49.8	42.2	56.7	48.9
			FOSTERS			
Mean	45.4	44.3	37.5	40.0	40.5	41.5
To test crop						
N0	44.9	40.0	38.0	30.0	44.1	
N1	48.5	46.0	37.5	43.6	38.2	
N2	46.4	44.8	36.2	42.3	42.7	
N3	41.7	46.3	38.5	44.0	37.1	
T0	44.4	42.1	35.1	36.1	38.7	39.3
T1	46.3	46.4	40.0	43.8	42.4	43.8

Mean D.M. %: Highfield 80.3
Fosters 81.9

NOTES: (1) In the 1964 tables wheat only, the order of rotations is different from that above. In future the order will be as above i.e. Lu LC LN AH R.
(2) N levels are different on AH from remainder see 64/B/1.23.

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65/B/1.8

POTATOES 2ND TEST CROP. TOTAL TUBERS

1961 - 1963

	Lu	Ley	CG	AH	R	Mean
			HIGHFIELD			
			(1) and (2)			(±0.399)
F	20.64	21.72	20.67	20.35	21.96	21.07
D	23.28	20.92	19.56	22.53	21.02	21.46
Mean (±0.925)	21.96	21.32	20.11	21.44	21.49	21.26
			FOSTERS			
			(1) and (2)			(±0.407)
F	18.48	20.15	18.32	18.16	20.50	19.12
D	20.52	21.55	19.72	19.73	21.33	20.57
Mean (±0.651)	19.50	20.85	19.02	18.94	20.91	19.85

Highfield (1) (±1.120) For use in horizontal and diagonal comparisons
(2) (±0.892) For use in vertical and interaction comparisons

Fosters (1) (±0.915) For use in horizontal and diagonal comparisons
(2) (±0.909) For use in vertical and interaction comparisons

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65/B/1.9

POTATOES 2ND TEST CROP. % WARE

1961 - 1963

	Lu	Ley	CG	AH	R	Mean
			HIGHFIELD			
F	96.7	97.3	97.3	96.9	97.2	97.1
D	97.4	97.0	96.5	97.6	97.0	97.1
Mean	97.1	97.1	96.9	97.3	97.1	97.1
			FOSTERS			
F	97.3	97.3	97.5	97.3	97.3	97.3
D	97.7	97.6	97.6	97.7	97.5	97.6
Mean	97.5	97.5	97.5	97.5	97.4	97.5

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65/B/1.10

BARLEY 3RD TEST CROP

GRAIN

1960 - 1962

	Lu	Ley	CG	AH	R	Mean
			HIGHFIELD			
Mean	43.8	44.8	48.1	47.0	42.9	45.3
1965						
N0	44.3	45.2	46.5	50.5	45.2	46.3
N1	44.3	45.4	48.3	48.5	42.0	45.7
N2	43.4	44.2	48.4	47.7	42.4	45.2
N3	43.1	44.2	49.0	41.4	42.0	43.9
1964						
F	43.8	45.5	47.9	46.0	43.4	45.3
D	43.7	44.0	48.2	48.1	42.4	45.3

Excluding AH

1965

1964	N0	N1	N2	N3	Mean
F	45.4	44.7	45.8	44.6	45.1
D	45.2	45.3	43.4	44.4	44.6

Mean D.M. %: 74.4

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65/B/1.11

BARLEY 3RD TEST CROP

GRAIN

1960 - 1962

	Lu	Ley	CG	AH	R	Mean
			FOSTERS			
Mean	46.7	45.7	45.3	47.6	44.0	45.9
1965						
N0	47.0	46.3	48.1	46.4	45.5	46.7
N1	47.2	45.7	46.0	-	43.6	-
N2	46.8	44.7	43.1	46.7	43.1	44.9
N3	45.8	46.1	44.2	50.2	43.7	46.0
N4	-	-	-	47.1	-	-
1964						
F	46.9	46.5	44.3	47.2	45.2	46.0
D	46.5	44.9	46.4	48.0	42.8	45.7

Excluding AH

1965

1964	N0	N1	N2	N3	Mean
F	46.6	46.4	45.0	45.0	45.7
D	46.9	44.8	43.9	45.0	45.1

Mean D.M. %: 74.8

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65/B/1.12

TREATMENT CROPS ARABLE AND HAY ROTATION

HAY: DRY MATTER (Total 2 cuts)

1964

	N0	N1	N2	N3	Mean
		HIGHFIELD			
1963					
F	57.6	55.4	55.6	57.5	56.5
D	58.3	54.7	56.4	55.6	56.2
Mean	58.0	55.0	56.0	56.6	56.4
		FOSTERS			
F	53.1	56.4	54.9	60.4	56.2
D	63.4	58.0	60.4	56.3	59.5
Mean	58.3	57.2	57.6	58.3	57.9

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65/B/1.13

TREATMENT CROPS ARABLE AND HAY ROTATION

HIGHFIELD Mean		FOSTERS Mean
	SUGAR BEET	
	ROOTS	
20.53		17.92
	SUGAR %	
17.8		18.5
	TOTAL SUGAR	
72.9		66.4
	TOPS	
22.59		20.14
	OATS	
	GRAIN	
51.0		54.3

Oats, grain, mean D.M. %: Highfield 68.9
Fosters 68.9

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LUCERNE: DRY MATTER

	HIGHFIELD 1963			FOSTERS 1963		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	40.6	46.8	43.7	49.2	55.3	52.3
2nd year (4 cuts)			105.2			99.0
3rd year (3 cuts)			74.8*			71.1*

* Based on one whole plot only.

ALL-GRASS LEY: DRY MATTER

	HIGHFIELD 1963			FOSTERS 1963		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	55.5	56.8	56.1	55.6	58.8	57.2
2nd year (4 cuts)			98.9			100.1
3rd year (4 cuts)			78.6			78.3

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65/B/1.15

CLOVER-GRASS LEY: DRY MATTER

	HIGHFIELD 1963			FOSTERS 1963		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	39.0	40.5	39.7	31.7	35.4	33.6
2nd year (4 cuts)			60.5			69.0
3rd year (4 cuts)			56.5			60.5

PERMANENT GRASS: DRY MATTER

	N0	N1	Mean
HIGHFIELD			
15th exptl year			
Blocks 9 and 12	44.4	102.2	73.3
Blocks 10 and 11	46.3	100.3	73.3
16th exptl year			
Blocks 5 and 8	41.4	103.8	72.6
Blocks 6 and 7	36.0	101.9	69.0
17th exptl year			
Blocks 1 and 4	40.0	103.6	71.8
Block 2	47.1	101.3	74.2

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

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65/B/1.16

RESEEDED GRASS: DRY MATTER

	HIGHFIELD			FOSTERS		
	N0	N1	Mean	N0	N1	Mean
15th exptl year	42.5	98.2	70.4	52.4	94.6	73.5
16th exptl year	38.1	97.1	67.6	55.0	99.0	77.0
17th exptl year	47.7	96.8	72.2	58.7	95.9	77.3

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

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65/B/2.1

REFERENCE PLOTS

ROTHAMSTED (R) GREAT FIELD IV AND HIGHFIELD IX

AND

WOBURN (W) STACKYARD SERIES C, 1965

(RA, RG, WRA and WRF)

For details of previous year's results, and for rates of fertilisers, etc., see 'Results' 58/Bc/1, 59/Bc/1, 60/B/3, 61/B/2, 62/B/2, 63/B/2, 64/B/2 and 64/B/11. For Sitka spruce see 63/B/2 and 64/B/2.

The grass-clover ley (additional plots only) on Great Field IV (R) received 0.45 cwt N, an increase of 0.15 cwt on previous years.

Cultivations, etc.:-

Great Field IV (R)

Winter wheat: Dug by hand: Sept 21, 1964. P, K, Mg, Ca and S applied: Sept 24. Seed drilled: Oct 6. First N dressings applied (excluding additional plots), additional plots sprayed with mecoprop (Iso-Cornox at 6 pints in 100 gals): Mar 31, 1965. Second N dressings applied, all N applied to the additional plots: May 4. Trace element spray applied: May 5. Harvested: Aug 27.

Kale: Dung applied, plots dug by hand: Nov 9, 1964. P, K, Mg, Ca and S applied: Feb 9 - 18, 1965. First N dressings applied to additional plots, all N to remainder, seed drilled: Apr 4. Second N dressings applied to additional plots: May 26. Magnesium-free calcium carbonate applied to additional plots at 48 cwt: May 27. Trace element spray applied: June 10. Harvested: Oct 22.

Barley: Plots dug by hand: Nov 19, 1964. P, K, Mg, Ca and S applied: Feb 9, 1965. All N applied, seed drilled: Mar 1. Trace element spray applied: May 25. Harvested: Aug 13. Variety: Proctor, Deba Abed on additional plots.

Grass-clover ley: Undersown in barley: Mar 10, 1964. P, K, Mg, Ca and S applied: Feb 9 - 18, 1965. All N applied: Feb 23. Trace element spray applied: May 5. Magnesium-free calcium carbonate applied to additional plots at 48 cwt: May 27. Additional plots cut 3 times: May 26, July 22, Oct 8, 1965, remainder 4 times: Oct 29, 1964, May 26, July 22, Oct 8, 1965.

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Potatoes: Dung applied, plots dug by hand: Nov 10, 1964. P, K, Mg, Ca and S applied: Feb 9 - 18, 1965. First N dressing applied to additional plots, all N applied to remainder: Apr 14. All plots rotary cultivated, setts planted: Apr 23. Second N dressing applied to additional plots: May 26. Trace element spray applied: June 10. Earthed up: June 11. Sprayed twice with triphenyltin acetate at 9.8 oz in 120 gals: July 5 and 27. Harvested: Plots with neither K nor dung (where haulm died early): Aug 13, remainder: Sept 27.

Permanent grass: Dung, P and K applied: Feb 9, 1965. N applied - first dressing: Feb 23, second: May 20, third: July 22. Cut 3 times: May 20, July 22 and Oct 8.

Stackyard Series C (W):-

Oats: P and K applied: Feb 10, 1965. First N dressing applied, seed drilled: Mar 17. Sprayed with 17.5 lb DDT in 355 gals: Apr 30. Second N dressing applied: May 14. Harvested: Aug 23.

Sugar Beet: Dung applied, plots dug by hand: Nov 23, 1964. P and K applied: Feb 10, 1965. First N dressing applied, plots rotary cultivated, seed drilled: Apr 9. Sprayed with DDT at 15 oz in 40 gals: May 14. Sprayed with dimethoate at 6 oz in 40 gals: May 21. Singled: June 1. Sprayed four times with malathion and DDT (Kil at 12 fluid oz in 50 gals): June 21, July 5, July 16, Aug 2. Harvested: Oct 14.

Barley: P and K applied: Feb 10, 1965. First N dressing applied: Mar 17. Seed drilled: Mar 25. Second N dressing applied: May 14. Harvested: Aug 23.

Grass-clover ley: Undersown in barley: Mar 9, 1964. P and K applied: Feb 10, 1965. All N applied: Mar 16. Cut four times: Oct 30, 1964, May 24, July 27, Oct 11, 1965.

Potatoes: Dung applied, plots dug by hand: Nov 25, 1964. P and K applied: Feb 10, 1965. First N dressing applied, plots rotary cultivated, setts planted: Apr 9. Second N dressing applied: May 25. Earthed up: June 2. Sprayed 3 times with malathion and DDT (Kil at 12 fluid oz in 50 gals): June 21, July 5, July 16. Sprayed 3 times with Bordeaux mixture at 7 lb in 40 gals: July 5, July 16 and July 28. Sprayed with malathion and DDT (Kil at 12 fluid oz in 50 gals): Aug 2. Harvested: Sept 23.

Permanent grass: Dung, P and K applied: Feb 10, 1965. N applied - first dressing: May 16, second: May 25, third: July 27. Cut three times: May 25, July 27, Oct 11.

Soft fruit: Dung and PK applied: Feb 10, 1965. N dressing applied: Mar 16.

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Bed 1. For details of previous year's results see 63/B/2 and 64/B/2.

Cultivations, etc.:-
Formalin applied: Dec 8, 1964 in 4 l. per sq.yd. water. All manures (other than N) dug in: Apr 1, 1965. Seed sown: Apr 7. T.V.O. pre-emergent spray: Apr 29. N top dressed: July 7, July 30, Aug 24.

Bed 2.
Comparison of soluble and slow-release NPK Mg fertiliser applied to one-year seedbeds and transplant beds of Sitka spruce (Picea sitchensis) and Norway spruce (Picea abies).

Bed 2, which is alongside Bed 1, has had a similar history except that grass was not removed until winter 1962/63. The bed remained fallow until the spring of 1965 when Plots 1 to 6 were lined out with one-year seedlings and Plots 7 to 12 were sown. All twelve plots were split for Sitka spruce (S) v. Norway spruce (N).

Design: Seedbeds. 2 blocks of 3 plots split into 2 (unrandomised)
Transplants. 2 blocks of 3 plots split into 2 (unrandomised)

Area of each plot: 0.0002 acre (1 square yard).

No. of viable seeds per plot: Sitka spruce 1800
Norway spruce 1500

No. of transplants per species per plot: 54.

Treatments
None (O)
NPK Mg soluble (A)
NPK Mg slow-release + 'Nitro-Chalk' top dressed (B).

Symbols, rates and forms of materials applied (per sq.yd).
NPK Mg soluble
N: 'Nitro-Chalk 21' applied in three summer top dressings at 4.5 g.N per occasion for seedbeds, and 3 g.N per occasion for transplants.
PK: Potassic superphosphate (20% P2O5, 10% K2O) at 9 g.P, 9 g.K.
NPK Mg slow-release + 'Nitro-Chalk'
N (part): 'Nitro-Chalk 21' applied in three summer top dressings at 4.5 g.N per occasion for seedbeds and 3 g.N per occasion for transplants.
NPK Mg: Magnesium ammonium phosphate supplying 2 g.N, 4.5 g.P, 3.5 g.Mg
Potassium metaphosphate supplying 4.5 g.P, 6 g.K.

Cultivations, etc.:- All manures (other than N) dug in: Apr 1, 1965. Seed sown: Apr 7. T.V.O. pre-emergent spray: Apr 29. N top dressed: July 7, July 30, Aug 24.

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NOTES: (1) Height assessments
Seedbeds: Three 2-inch grids (i.e. one-sixth) measured and counted per plot or half-plot.
Transplants: Two inside lines (i.e. 36 trees) per species measured.

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

(3) During second half of October nearly all seedlings on 'no K' plots in Bed 1 had dead needle tips. A few plants were also affected in other plots. Later the whole of the 'no K' plots became severely discoloured. The symptoms resemble those attributable to frost damage on no-K or low-K plots at Wareham and Kennington, but it is possible that at Woburn smog was a contributory factor.

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

Cultivations, etc.: P and K fertilisers applied: Nov 20, 1964. Ground chalk applied to appropriate plots: Nov 30. First N dressings applied: Feb 26, 1965. Sample cuts taken 4 times: May 6, June 17, Aug 20, Oct 25. N dressings applied after first 3 cuts. Sampling cages moved after each cut.

Standard errors per plot.
Highfield IX (R), Dry Matter:
1st cut: 3.73 or 24.9% (26 d.f.)
2nd cut: 4.09 or 11.0% (26 d.f.)
3rd cut: 4.48 or 10.6% (26 d.f.)
4th cut: 2.84 or 11.7% (26 d.f.)
Total of 4 cuts: 7.66 or 6.4% (26 d.f.)
Stackyard Series C (W) Sitka spruce Bed 1:
Mean height: 0.201 or 7.6% (13 d.f.)
Plant number: 167.32 or 11.4% (13 d.f.)

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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	30.9	35.8	7.12	15.2	13.2	0.6	16.4	15.0	10.8	42.8	3.48	7.0	20.1	14.9	42.0
N1	40.9	44.9	11.80	15.9	16.1	0.9	18.8	15.0	10.3	45.0	3.48	15.1	20.5	19.0	54.6
P	38.5	50.4	16.84	17.8	15.3	3.6	20.0	13.8	8.7	46.1	3.68	8.2	15.1	10.0	33.3
N1P	32.2	45.9	22.57	26.4	27.2	0.4	19.1	8.7	5.9	34.1	3.56	20.1	20.4	19.1	59.6
K	41.8	45.3	6.60	17.1	12.9	6.0	26.0	25.0	14.4	71.4	11.64	7.3	15.0	12.6	34.9
N1K	48.0	55.4	3.12	20.9	20.9	4.1	30.0	26.3	14.7	75.1	12.59	20.9	27.1	23.8	71.8
PK	39.1	58.2	13.72	17.1	15.8	5.1	34.1	23.1	21.2	83.5	13.02	8.0	20.1	13.2	41.3
N1PK	50.7	69.1	27.08	26.8	30.8	3.5	35.9	26.1	22.1	87.6	17.71	24.0	25.7	21.4	71.1
N2PK	44.9	68.2	32.82	28.6	40.7	2.0	43.2	26.5	22.1	93.8	17.97	45.6	30.6	28.0	104.2
D	50.0	67.8	26.22	24.7	22.2	6.7	32.4	25.7	20.6	85.4	20.92	34.2	24.0	25.8	84.0
N1PKD	46.1	72.9	32.99	22.6	36.2	9.4	37.8	28.7	22.6	98.5	25.87	42.7	26.5	30.0	99.2
N2PKD	44.4	84.7	43.06	26.9	47.1	1.3	45.9	28.6	26.1	101.9	26.22	58.0	29.0	25.5	112.5
Mean D.M.%	83.6	67.2		81.0	57.7	22.6	19.2	17.5	16.0	18.8		21.8	19.1	16.7	19.2

65/E/2.5

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 Total of 3 cuts	Potatoes TOTAL TUBERS
None	35.5	46.0	14.24	9.3	8.0	19.1	18.0	12.1	49.2	5.16
N2 PK	44.0	68.6	36.64	29.8*	29.4	40.9	15.7	19.2	75.8	16.14
N2 PK Mg Ca	42.0	70.2	38.20	30.7	30.9	41.9	16.0	17.3	75.2	18.75
N2 PK Mg S	46.4	69.8	35.07	31.4	29.6	39.6	12.9	14.9	67.4	18.66
N2 PK Ca S	46.5	67.8	35.42	33.6	31.4	42.0	23.7	19.7	85.4	19.88
N2 PK Mg Ca S	40.8	71.3	36.46	28.4*	28.0	43.0	20.9	17.7	81.6	17.71
N2 PK Mg Ca S TE	38.4	67.5	35.76	34.1	36.2	47.4	14.9	15.5	77.8	15.88
Mean D.M. %:	84.1	73.5		83.6	61.2	20.9	17.9	15.9	18.2	

* Yields estimated from grain:straw ratios.

65/B/2.6

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STACKYARD SERIES C (W)

Treatment	Oats GRAIN	Oats STRAW	Sugar beet ROOTS	Barley GRAIN	Barley STRAW	Ley: DRY MATTER 1st cut	2nd cut	3rd cut	4th cut	Total of 4 cuts	Potatoes: TOTAL TUBERS	Permanent grass: DRY MATTER 1st cut	2nd cut	3rd cut	Total of 3 cuts
None	34.7	28.2	5.64	15.8	14.6	4.1	21.1	15.9	11.5	52.6	2.93	18.0	10.3	7.7	36.0
N1	50.6	44.2	8.07	29.9	24.1	2.2	29.8	13.4	8.0	53.4	4.48	24.0	18.4	15.9	58.3
P	37.3	28.9	7.09	13.3	11.6	5.3	23.2	16.9	11.9	57.3	4.48	16.3	7.3	6.3	29.9
N1P	52.1	43.4	8.12	30.5	21.1	2.0	27.4	11.9	6.8	48.1	3.78	23.8	17.2	14.9	55.9
K	40.9	34.8	7.58	14.1	10.6	9.3	26.2	25.4	24.7	85.6	5.64	24.1	14.8	9.8	48.7
N1K	49.9	43.5	11.94	30.9	31.3	6.2	32.9	22.8	21.1	83.0	9.03	34.6	21.1	20.4	76.1
PK	35.1	31.3	7.18	16.7	15.5	13.9	28.6	26.0	23.1	91.6	5.32	26.4	16.4	12.0	54.8
N1PK	53.6	50.5	10.78	34.4	34.5	6.2	32.6	22.9	22.1	83.8	8.88	33.0	21.3	21.9	76.2
N2PK	57.5	56.5	16.11	40.7	44.4	2.6	38.0	21.1	20.9	82.6	11.19	36.0	25.1	28.0	89.1
D	46.7	40.9	14.50	24.1	20.2	11.2	23.0	22.8	24.6	81.6	9.96	28.4	12.7	11.2	52.3
N1PKD	55.1	52.4	19.12	36.0	41.9	5.3	37.2	21.2	24.4	88.1	17.06	26.2	22.4	23.8	72.4
N2PKD	56.4	57.1	22.06	41.8	58.2	4.2	36.2	24.6	22.3	87.3	22.61	36.7	26.3	27.4	90.4
Mean D.M. %:	72.7	44.3		77.0	51.4	20.6	19.9	25.3	20.6	21.6		21.1	24.8	24.1	23.3

65/B/2.7

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65/B/2.8

STACKYARD C (W). Bed 1

SITKA SPRUCE

Treatment	MEAN HEIGHT: INCHES	PLANT NUMBER: PER SQ YARD
	(±0.142)	(±118.3)
None	1.56 (1)	1552 (2)
PK Mg	1.52	1404
NK Mg	2.67	1416
NP Mg	2.67	1497
NPK	2.90	1578
NPK Mg	2.92 (1)	1443 (2)
NPK Mg F	3.23	1416
C	2.93	1464
C NPK Mg	3.57	1425
L NPK Mg	3.46	1353
Mean	2.66	1462

(1) (±0.101) (2) (±83.7)

Bed 2 PLOTS 1 - 6

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	6.94	7.43	8.98	7.78
NS	6.18	6.78	7.60	6.85
Mean	6.56	7.10	8.29	7.32

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65/B/2.9

STACKYARD C (W)

Bed 2 PLOTS 7 - 12

	O	A	B	Mean
	MEAN HEIGHT: INCHES			
SS	0.66	2.50	2.94	2.03
NS	0.95	2.10	2.52	1.86
Mean	0.80	2.30	2.73	1.94
	PLANT NUMBER: SQ YD			
SS	14.04	13.68	16.74	14.82
NS	11.52	12.84	12.84	12.40
Mean	12.78	13.26	14.79	13.61

Erratum to Results 65/B/2.9

Plant number: square yard

Multiply all figures by 100 (i.e. delete decimal points).

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65/B/2.10

HIGHFIELD IX (R)

DRY MATTER
GRASS

	PK	Granular	Triple	Mean
		1ST CUT		
		(±2.64)*		(±1.87)
N0	00	6.5	7.5	7.0
N1	00	13.3	9.1	11.2
A1	00	14.9	13.4	14.2
N0	10	9.4	7.6	8.5
N1	10	15.6	16.5	16.1
A1	10	17.0	15.6	16.3
N0	01	13.2	10.5	11.9
N1	01	15.4	16.1	15.7
A1	01	16.5	14.4	15.4
N0	11	10.8	7.1	8.9
N1	11	27.3	24.5	25.9
A1	11	22.5	17.9	20.2
N2	11	15.2	21.6	18.4
A2	11	21.8	19.1	20.5
Mean		15.7	14.4	15.0
		2ND CUT		
		(±2.89)*		(±2.04)
N0	00	22.9	25.9	24.4
N1	00	38.1	35.8	36.9
A1	00	34.2	33.6	33.9
N0	10	32.4	18.8	25.6
N1	10	44.2	42.9	43.6
A1	10	40.2	38.8	39.5
N0	01	24.3	26.8	25.6
N1	01	45.1	37.5	41.3
A1	01	34.8	39.3	37.0
N0	11	28.2	31.3	29.8
N1	11	45.2	46.8	46.0
A1	11	40.6	40.1	40.3
N2	11	48.1	49.5	48.8
A2	11	48.6	46.5	47.6
Mean		37.6	36.7	37.2

Mean D.M. %: 1st cut: 17.5
2nd cut: 18.0

* For use in vertical and interaction comparisons only.

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65/B/2.11

HIGHFIELD IX (R)

DRY MATTER
GRASS

	PK	Granular	Triple	Mean
		3RD CUT		
		(±3.17)*		(±2.24)
N0	00	23.4	37.1	30.3
N1	00	37.6	45.1	41.4
A1	00	42.1	42.9	42.5
N0	10	30.4	28.2	29.3
N1	10	43.2	42.6	42.9
A1	10	48.0	44.7	46.3
N0	01	31.4	34.6	33.0
N1	01	49.6	48.5	49.0
A1	01	40.5	51.3	45.9
N0	11	33.5	35.2	34.3
N1	11	39.8	50.0	44.9
A1	11	45.6	47.5	46.5
N2	11	55.0	49.0	52.0
A2	11	51.3	58.0	54.7
Mean		40.8	43.9	42.4
		4TH CUT		
		(±2.01)*		(±1.42)
N0	00	20.9	21.1	21.0
N1	00	25.4	28.9	27.2
A1	00	24.0	21.1	22.5
N0	10	20.4	22.1	21.3
N1	10	26.2	21.4	23.8
A1	10	24.7	21.0	22.8
N0	01	22.2	20.7	21.5
N1	01	24.5	30.4	27.5
A1	01	24.3	24.8	24.5
N0	11	21.6	23.5	22.6
N1	11	26.8	27.4	27.1
A1	11	25.4	21.9	23.7
N2	11	27.9	30.2	29.0
A2	11	26.8	27.6	27.2
Mean		24.4	24.4	24.4

Mean D.M. %: 3rd cut: 16.5
4th cut: 18.1

* For use in vertical and interaction comparisons only.

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65/B/2.12

HIGHFIELD IX (R)

DRY MATTER
GRASS

	Granular	Triple	Mean
	TOTAL OF 4 CUTS		
PK	(±5.42)*		(±3.83)
N0 00	73.6	91.6	82.6
N1 00	114.4	119.0	116.7
A1 00	115.2	110.9	113.0
N0 10	92.7	76.7	84.7
N1 10	129.2	123.4	126.3
A1 10	129.9	119.9	124.9
N0 01	91.2	92.7	92.0
N1 01	134.6	132.4	133.5
A1 01	116.1	129.8	123.0
N0 11	94.0	97.2	95.6
N1 11	139.2	148.7	143.9
A1 11	134.2	127.4	130.8
N2 11	146.1	150.3	148.2
A2 11	148.6	151.2	149.9
Mean	118.5	119.4	118.9

Mean D.M. %: 17.5

* For use in vertical and interaction comparisons only.

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65/B/3.1

GREEN MANURING EXPERIMENT

(WGM)

Woburn Stackyard 1965, the second year with revised treatments.

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

Area of each sub-plot: 0.0195. Area harvested: 0.0145.

Cultivations, etc.: Ploughed (plots not undersown): Oct 28, 1964. Green manure plots ploughed: Feb 4, 1965. 'Nitro-Chalk' applied: Lower Half - Mar 12, Upper Half - Mar 17. Seed drilled at 2.5 bushels, trefoil sown at 30 lb, ryegrass at 40 lb: Mar 29. Sprayed with MCPB at 2 lb a.e. in 40 gals: May 11. Combine harvested: Aug 26.

ESTIMATES OF PRODUCE (ROOTS AND TOPS) OF GREEN MANURE CROPS: CWT PER ACRE

1965

UPPER HALF

TO BARLEY 1964

	N0	N1	N2	N3	Mean
			DRY MATTER		
T	14.9	10.7	7.8	5.2	9.6
R	5.6	4.3	4.1	3.0	4.2
Mean	10.2	7.5	5.9	4.1	6.9
			NITROGEN		
T	0.414	0.280	0.161	0.126	0.245
R	0.077	0.061	0.064	0.051	0.063
Mean	0.246	0.170	0.112	0.088	0.154

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65/B/3.2

1965

LOWER HALF

TO BARLEY 1964

	N0	N1	N2	N3	Mean
			DRY MATTER		
T	15.8	12.6	8.2	5.8	10.6
R	6.8	6.5	5.6	3.6	5.7
Mean	11.3	9.6	6.9	4.7	8.1
			NITROGEN		
T	0.449	0.320	0.184	0.131	0.271
R	0.075	0.073	0.069	0.053	0.068
Mean	0.262	0.196	0.126	0.092	0.169

1964

N TO BARLEY 1963

	N0	N1	N2	N3	Mean
			DRY MATTER		
T	20.7	24.4	17.9	15.3	19.6
R	27.3	21.8	19.9	17.3	21.6
Mean	24.0	23.1	18.9	16.3	20.6

Mean N %: T 3.40
R 1.66

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65/B/3.3

SUMMARY OF RESULTS

LOWER HALF

BARLEY (2nd crop)

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

N 1964 - 65

	N0	N1	N2	N3	Mean
Mean	17.8	26.2	36.2	39.2	29.9
N 1963*					
N0	19.8	26.5	36.2	39.1	30.4
N1	17.7	24.5	36.4	39.6	29.6
N2	17.1	28.2	37.3	38.4	30.2
N3	16.8	25.6	34.7	39.8	29.2
Undersown 1964-65					
O	12.8	24.2	35.2	38.4	27.7
T	36.4	34.6	41.6	40.9	38.4
R	9.4	21.8	32.6	39.1	25.7
Green manures+ 1955 - 63					
T	16.3	26.1	34.4	39.8	29.1
R	19.0	24.4	38.1	38.1	29.9
TU	17.9	25.7	37.2	39.2	30.0
RU	18.3	28.7	35.0	39.7	30.4
Dung last applied 1953					
O	17.7	26.0	36.4	39.4	29.9
D	18.0	26.4	35.9	39.1	29.8

+
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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65/B/3.4

BARLEY (2nd crop)

LOWER HALF

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

GREEN MANURES 1955 - 63

Dung last applied 1953	T	R	TU	RU
O	27.8	31.7	31.3	28.8
D	30.5	28.1	28.7	32.0

PLOTS FALLOW UNDER OLD SCHEME

N 1964 - 65

	N1	N2	N3	N4	Mean
Mean	20.1	34.2	40.7	40.6	33.9
N 1963*					
N0	21.0	34.4	41.6	42.5	34.9
N1	21.6	34.5	39.5	40.1	33.9
N2	18.4	34.9	40.1	40.3	33.4
N3	19.6	33.0	41.5	39.6	33.4
Dung last applied 1953					
O	20.6	34.6	40.5	41.4	34.3
D	19.7	33.7	40.9	39.8	33.5

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

Mean D.M. %: 75.7

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65/B/3.5

BARLEY (3rd crop)

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

N 1964 - 65

	N0	N1	N2	N3	Mean
Mean	16.5	26.6	34.4	36.6	28.5
N 1963					
N0	19.3	28.1	34.4	37.5	29.8
N1	13.4	24.6	36.1	37.1	27.8
N2	15.2	27.4	34.4	37.3	28.6
N3	18.2	26.2	32.7	34.3	27.9
Undersown 1964-65					
O	13.7	25.4	34.3	36.4	27.4
T	27.6	35.0	35.1	36.7	33.6
R	11.2	20.4	33.9	36.8	25.6
Green manures+ 1955 - 64					
T	16.0	26.2	34.0	36.0	28.1
R	17.2	24.0	34.2	37.2	28.2
TU	13.7	29.5	33.7	36.5	28.4
RU	19.2	26.6	35.7	36.4	29.5
Dung last applied 1952					
O	16.3	26.2	34.4	36.1	28.2
D	16.7	26.9	34.5	37.1	28.8

+
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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65/B/3.6

BARLEY (3rd crop)

GRAIN

EXCLUDING PLOTS FALLOW UNDER OLD SCHEME

GREEN MANURES 1955 - 64

Dung last applied 1952	T	R	TU	RU
O	27.1	26.4	30.0	29.5
D	29.0	29.9	26.7	29.5

PLOTS FALLOW UNDER OLD SCHEME

N 1964 - 65

	N1	N2	N3	N4	Mean
Mean	21.0	31.7	37.4	38.0	32.0
N 1963					
N0	16.0	36.8	36.1	41.9	32.7
N1	24.0	33.4	36.3	30.5	31.1
N2	22.5	31.0	35.6	38.9	32.0
N3	21.4	25.5	41.5	40.8	32.3
Dung last applied 1952					
O	19.2	29.5	35.9	35.7	30.1
D	22.7	33.9	38.9	40.4	34.0

Mean D.M. %: 77.6

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65/B/4.1

LEY AND ARABLE ROTATIONS

(WIA)

Woburn Stackyard 1965 - the 28th year.

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

Sugar Beet: Fertilisers are now as follows:-

Test fertilisers: All combinations of:-

1. Nitrogen: Ley and lucerne rotations: 0.35, 0.70, 1.05, 1.40 cwt N.
   Arable with roots rotation: 0.70, 1.05, 1.40, 1.75 cwt N.
   Arable with hay rotation: 1.05, 1.40, 1.75, 2.10 cwt N.
   All N as 'Nitro-Chalk'.
2. Potash: 0.0, 0.9 cwt K_2O as muriate of potash.

Basal fertilisers: 2.0 cwt P_2O_5 as superphosphate, 0.9 cwt K_2O as muriate of potash and magnesium sulphate at 500 lb $MgSO_4$ $7H_2O$.

Corrective K dressings (in cwt K_2O) as muriate of potash:

Continuous rotations	No dung plots	Dung plots
Rotation		
Arable	3	2
Arable with hay	4	3
Lucerne	3	3
Grazed ley	0	0
Alternating rotations		
Last 2 rotations in order		
Arable/ley	3	1
Lucerne/arable with hay	3	3
Arable with hay/lucerne	3	3
Ley/arable	3	2

K equivalent of dung: In 1965 plots not receiving dung received 3.7 cwt K_2O as muriate of potash, the K equivalent of the dung used.

The 1962 dressing was omitted from the 'Results' for that year and was 3.0 cwt K_2O.

Sainfoin: The third-year lucerne failed and was replaced by sainfoin, which received a basal dressing of 0.5 cwt N as 'Nitro-Chalk', 0.5 cwt P_2O_5 as superphosphate and 1.5 cwt K_2O as muriate of potash. The second-year sainfoin failed and was resown with a basal fertiliser in the seedbed of 0.5 cwt P_2O_5 and 0.5 cwt K_2O as (0:20:20). The potatoes were lifted early because of damage by eelworm (Heterodera rostochiensis).

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Cultivations, etc.:
Treatment crops.

Ley 1st year: Ploughed: Aug 24, 1964. Seedbed fertilisers applied and seed sown: Apr 1, 1965. Compound fertiliser applied: June 16, Sept 9 - 21. Grazed 8 circuits: June 2 - Nov 7.

Ley 2nd year: Compound fertiliser applied: Mar 19, June 2, Sept 1. Grazed 10 circuits: Apr 22 - Nov 3.

Ley 3rd year: Compound fertiliser applied: Mar 19, June 22, Aug 23. Grazed 9 circuits: Apr 30 - Oct 26.

Sainfoin 1st year: Ploughed: Aug 24, 1964. Fertilisers applied: Apr 5, 1965. Seed drilled at 60 lb: Apr 7. Cut twice: Aug 11, Oct 20.

Sainfoin 2nd year: NK fertiliser applied: Mar 19, 1965. Cut twice: May 31, Aug 4. Sprayed with paraquat at 0.5 lb ion in 40 gals: Aug 12. Rotary cultivated: Aug 16. Basal PK applied: Aug 18. Re-drilled at 56 lb: Aug 19.

Sainfoin 3rd year: Ploughed: Nov 9, 1964. Fertilisers applied: Apr 5, 1965. Seed drilled at 60 lb: Apr 7. Cut twice: Aug 11, Oct 20.

Arable rotations.

Potatoes: Ploughed: Aug 24, 1964. Fertilisers applied, plots rotary cultivated: Apr 6, 1965. Potatoes machine planted: Apr 7. Earthed up: June 14. Sprayed with mancozeb at 1.2 lb in 37 gals: July 5, July 16 and Aug 4. Sprayed with diquat (Reglone at 4 pints in 40 gals): Aug 12. Lifted: Aug 31.

Rye: Ploughed: Sept 29 - Oct 21, 1964. Seed combine drilled at 150 lb: Oct 22. 'Nitro-Chalk' applied: Mar 31, 1965. Combine harvested: Sept 14.

Seeds hay: Seeds undersown in rye at 30 lb: Apr 8, 1964. 'Nitro-Chalk' and PK compound applied: Mar 19, 1965. NK fertiliser applied: June 2. Cut twice: May 31, Aug 5.

Carrots: Ploughed: Sept 29, 1964. Fertilisers applied: Apr 8, 1965. Rotary cultivated, seed drilled at 3.5 lb: Apr 13. Sprayed with menazon (Saphicol at 0.5 pints in 40 gals): June 2, June 21. Lifted: Aug 27.

Test crops.

Sugar beet: Dung equivalent K and half corrective K (including all corrective K for plot 8 - arable/ley with dung applied: Nov 23, 1964. Dung applied: Nov 24. All plots ploughed: Nov 25. Part of basal superphosphate applied, basal muriate of potash and second half of corrective K applied: Feb 2, 1965. Remaining basal superphosphate applied, magnesium

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sulphate applied: Apr 1. Test 'Nitro-Chalk' and muriate of potash applied: Apr 2. Seed drilled at 5 lb: Apr 3. Singled: May 19. Lifted: Oct 26.

Barley: Ground chalk applied at 40 cwt: Nov 13, 1964. Ploughed: Nov 16. Balancing muriate of potash and basal superphosphate applied: Feb 16. 'Nitro-Chalk' applied: Feb 18. Seed drilled at 155 lb: Mar 12. Spring-tine cultivated and re-drilled at 140 lb because of bird damage: Apr 8. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 11. Combine harvested: Sept 1.

Standard errors per plot.

Sugar beet 1/8 plot:			
Roots:	2.146	or 10.6%	(21 d.f.)
Total sugar:	6.97	or 9.9%	(21 d.f.)
Tops:	2.081	or 12.1%	(21 d.f.)
Barley grain:			
Whole plot:	1.71	or 4.1%	(4 d.f.)
1/2 plot:	0.80	or 1.9%	(4 d.f.)

Errata to 'Results' 1963 and 1964

p. 63/B/4.4	Lucerne 1st year	year dung applied should read 1961 not 1958
p. 64/B/4.4	Sanfoin 1st year	year dung applied should read 1962 not 1959
	Lucerne 2nd year	year dung applied should read 1961 not 1958

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SUMMARY OF RESULTS

TREATMENT CROPS

LEY, SHEEP DAYS OF GRAZING

1st year	2nd year	3rd year
2168	3541	2915

SAINFOIN, DRY MATTER

	1st cut	2nd cut	Total
1ST YEAR			
Dung in 1963			
D0	24.6	7.4	32.0
D1	25.4	8.2	33.6
Lu	24.6	6.8	31.4
AH	25.4	8.6	34.0
Mean	25.0	7.7	32.7
2ND YEAR			
Dung in 1962			
D0	43.8	5.0	48.8
D1	43.0	4.2	47.2
Lu	42.4	4.2	46.6
AH	44.4	5.0	49.4
Mean	43.4	4.6	48.0

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65/B/4.5

SAINFOIN, DRY MATTER

	1st cut	2nd cut	Total
3RD YEAR (resown Spring 1965)			
Dung in 1961			
D0	26.7	4.3	31.0
D1	31.9	5.6	37.5
Lu	29.2	3.2	32.4
AH	29.4	6.8	36.2
Mean	29.3	5.0	34.3

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TREATMENT CROPS

	POTATOES		RYE	
	TOTAL TUBERS	% WARE	GRAIN	STRAW
D0	9.44	82.0	35.0	44.3
D1*	10.89	87.6	32.8	46.8
Ley	17.07	95.6	36.4	43.6
Lu	14.40	95.4	35.0	46.9
AH	4.05	69.6	29.8	48.7
AR	5.14	78.8	34.4	43.0
Mean	10.16	84.8	33.9	45.6

HAY

YIELD, DRY MATTER

	1st cut	2nd cut	Total
1961			
D0	57.6	39.0	96.6
D1	61.8	37.8	99.6
Ley	60.6	39.6	100.2
AH	58.8	37.2	96.0
Mean	59.7	38.4	98.1

* Dung applied: Potatoes for test crop sugar beet in 1963
Rye for test crop sugar beet in 1962

Mean D.M. %: Rye, grain: 68.4
straw: 72.6

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CARROTS

	Roots	Tops
1961		
D0	30.96	13.31
D1	30.86	13.12
Lu	32.00	13.50
AR	29.82	12.93
Mean	30.91	13.22

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65/B/4.8

1ST TEST CROP

SUGAR BEET

ROOTS

	N1	N2	N3	N4	N5	N6
			(1)			
D0 Ley	17.37	19.13	20.03	19.56	-	-
D0 Lu	19.66	21.85	20.76	21.94	-	-
D0 AH	-	-	17.10	18.52	19.50	19.61
D0 AR	-	17.19	19.27	20.48	20.87	-
D1 Ley	20.13	18.56	21.36	17.97	-	-
D1 Lu	22.79	22.78	22.85	24.03	-	-
D1 AH	-	-	19.11	21.11	20.97	20.36
D1 AR	-	18.53	21.76	21.50	21.99	-

	Ley	Lu	AH	AR	Mean
CON	18.69	22.12	19.95	19.32	20.02
ALT	19.84	22.05	19.13	21.08	20.52
			(2)		
D0 K0	18.35	21.69	18.22	19.12	19.35
D0 K1	19.69	20.42	19.15	19.79	19.76
D1 K0	19.92	22.05	20.00	21.77	20.93
D1 K1	19.09	24.18	20.78	20.11	21.04
Mean	19.26	22.08	19.54	20.20	20.27

(1) (±1.073) For use in horizontal and interaction comparisons
(2) (±0.759) For use in vertical and interaction comparisons

Symbols:
D0 = No dung
D1 = Dung

CON = Continuous rotation
ALT = Alternating rotation

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65/B/4.9

1ST TEST CROP

SUGAR BEET

SUGAR %

		N1	N2	N3	N4	N5	N6
D0	Ley	17.4	17.5	17.1	17.2	-	-
	Lu	17.8	18.2	17.5	17.7	-	-
	AH	-	-	18.0	17.4	17.4	16.7
	AR	-	17.8	18.0	17.5	17.2	-
D1	Ley	17.4	17.0	17.1	16.6	-	-
	Lu	17.4	17.7	17.4	16.7	-	-
	AH	-	-	17.5	17.3	17.1	16.9
	AR	-	17.7	17.4	17.2	17.1	-

	Ley	Lu	AH	AR	Mean
CON	17.3	17.5	17.3	17.3	17.3
ALT	17.0	17.6	17.3	17.6	17.4
D0 K0	17.5	17.7	17.7	17.7	17.6
D0 K1	17.2	17.9	17.0	17.6	17.4
D1 K0	16.8	17.4	17.1	17.5	17.2
D1 K1	17.2	17.2	17.2	17.2	17.2
Mean	17.1	17.5	17.3	17.5	17.4

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65/E/4.10

1ST TEST CROP

SUGAR BEET

TOTAL SUGAR

	N1	N2	N3	N4	N5	N6
			(1)			
Ley	60.4	66.8	68.5	67.4	-	-
DO Lu	69.8	79.4	72.6	77.7	-	-
AH	-	-	61.7	64.2	67.8	65.3
AR	-	61.2	69.5	71.6	71.7	-
Ley	69.8	62.8	72.8	59.3	-	-
D1 Lu	78.9	80.4	79.8	80.4	-	-
AH	-	-	66.7	72.9	71.9	68.7
AR	-	65.5	75.4	74.1	75.5	-

	Ley	Lu	AH	AR	Mean
CON	64.6	77.1	68.9	66.9	69.4
ALT	67.4	77.6	66.0	74.2	71.3
			(2)		
DO K0	64.1	76.6	64.4	67.6	68.2
DO K1	67.5	73.1	65.1	69.5	68.8
D1 K0	66.9	76.7	68.5	76.0	72.0
D1 K1	65.4	83.1	71.7	69.2	72.4
Mean	66.0	77.4	67.4	70.6	70.3

(1) (±3.48) For use in horizontal and interaction comparisons
(2) (±2.46) For use in vertical and interaction comparisons

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65/B/4.11

1ST TEST CROP

SUGAR BEET

TOPS

	N1	N2	N3	N4	N5	N6
			(1)			
D0 Ley	16.68	18.33	20.68	20.16	-	-
D0 Lu	13.21	15.14	16.44	17.86	-	-
D0 AH	-	-	14.92	15.31	17.82	20.09
D0 AR	-	10.61	12.67	13.79	17.37	-
D1 Ley	18.65	17.56	22.36	19.92	-	-
D1 Lu	18.89	19.92	19.18	19.89	-	-
D1 AH	-	-	15.80	19.04	20.36	21.55
D1 AR	-	11.14	15.01	15.47	16.61	-

	Ley	Lu	AH	AR	Mean
CON	18.09	17.93	18.90	13.04	16.99
ALT	20.49	17.20	17.32	15.13	17.54
			(2)		
D0 K0	18.27	16.53	16.41	13.43	16.16
D0 K1	19.66	14.79	17.65	13.78	16.47
D1 K0	20.23	19.11	19.65	15.02	18.50
D1 K1	19.01	19.83	18.73	14.10	17.92
Mean	19.29	17.57	18.11	14.08	17.26

(1) (±1.040) For use in horizontal and interaction comparisons
(2) (±0.736) For use in vertical and interaction comparisons

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65/B/4.12

2ND TEST CROP

BARLEY

1964	Ley	Lu	AH	AR	Mean
		GRAIN			
		(1) and (2)			(±0.28)
D0	38.5	42.4	41.4	41.1	40.9
D1	36.6	44.9	42.8	43.2	41.9
Mean (±1.21)	37.5	43.7	42.1	42.2	41.4
		STRAW			
D0	52.8	33.2	32.4	34.2	38.2
D1	48.9	37.0	29.6	40.9	39.1
Mean	50.9	35.1	31.0	37.6	38.6

Mean D.M. %: Grain: 75.2
Straw: 76.6

(1) (±1.27) For use in horizontal and diagonal comparisons

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

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65/B/5.1

WOBURN MARKET GARDEN EXPERIMENT

(WMG)

Organic manures, N, P and K - Lansome Field 1965, the fifth year with revised treatments.

For history, treatments, etc., see 'Details 1962' and Results 63/B/5 and 64/B/5.

Globe beet (Series B, 1965): Fertiliser and dung plots were used for a microplot experiment. Remaining plots were fallowed.

Treatments: All combinations of:-

1. Whole plots: Fertiliser plots: 1.5 cwt P_2O_5, 1.5 cwt K_2O (P_1K_1), 3.0 cwt P_2O_5, 3.0 cwt K_2O (P_2K_2), 3/4 dug in, 1/4 to seedbed.
   Dung plots: No P or K (P_0K_0), (P_1K_1).
2. Half plots: Fertiliser plots: Peat: None (O), 250 cwt peat dry matter (PT) 3/4 dug in, 1/4 to seedbed.
   Dung plots: Dung: None (DO), 10 (D1), 20 tons (D2), dug in.
3. Quarter plots: N: None (NO), 0.6 (N1), 1.2 (N2), 1.8 cwt N (N3) as 'Nitro-Chalk' 3/4 dug in, 1/4 to seedbed.
4. Eighth plots: Plant spacing: Singling to 3 inch (S3), 4 inch (S4).

Area of each sub-plot (Carrots): 0.0063. Area harvested: 0.0017.
Area of each microplot (Globe Beet): 0.0016. Area harvested: 0.0007.

Cultivations, etc.:-

Leeks 1964-65 Series B: The crop was harvested early, without weighing, in preparation for microplot experiment.

Carrots Series A: Dung applied, plots ploughed: Jan 19, 1965. Fertilisers applied: Apr 6. Seed drilled at 2.5 lb: Apr 9. Sprayed with menazon at 4 oz plus linuron at 10 oz in 40 gals: June 3. Sprayed with menazon at 4 oz in 40 gals: June 21. Lifted: 1st harvest: July 21, 2nd harvest: Aug 2.

Globe beet Series B microplots: Plots ploughed: Jan 14, 1965. Peat for digging in applied and all plots rotary cultivated: Mar 15. Fertilisers and dung applied, all plots dug by hand: Apr 5. Fallow area rotavated: Apr 22. Seedbed peat applied and lightly worked in: Apr 27. Seedbed fertilisers applied: May 6. Seedbed worked with drags and levelled with rakes, rubbed and graded seed drilled at 30 lb: May 10. Fallow area rotary cultivated: May 12. Singled: June 1. Hoed: June 15. Sprayed with a mixture of menazon, DDT, gamma BHC at 1.5 pints in 40 gals: June 21. Hoed: June 29. Fallow weeded and rotavated: July 30. Lifted: Aug 3.

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NOTE: Soil samples taken Aug 13. Crop samples taken for determination of dry matter and samples retained for chemical analysis.

Standard errors per plot.

Carrots: Saleable roots: 1st harvest: 0.739 or 12.6% (12 d.f.)
2nd harvest: 1.393 or 12.7% (12 d.f.)
Mean of 2 harvests: 0.968 or 11.5% (12 d.f.)
Tops from saleable roots: 1st harvest: 1.476 or 20.7% (12 d.f.)
2nd harvest: 1.696 or 16.5% (12 d.f.)
Mean of 2 harvests: 1.394 or 16.0% (12 d.f.)

Globe beet: Fertiliser plots:
Saleable bulbs Pooled 1/2 and 1/4 plots:
1.531 or 13.5% (12 d.f.)
1/8 plots: 0.822 or 7.2% (16 d.f.)

Total produce Pooled 1/2 and 1/4 plots:
2.379 or 10.8% (12 d.f.)
1/8 plots: 1.717 or 7.8% (16 d.f.)

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65/B/5.3

CARROTS: SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser None	Fertiliser N1P1K1
		1ST HARVEST		
		(±0.370)	(±0.523)	
10	D1	5.94	4.91	6.98
20	D2	7.00	7.69	6.30
10	C1	6.78	6.59	6.98
20	C2	6.74	7.33	6.14
		(±0.261)	(±0.370)	
	D1+C1	6.36	5.75	6.98
	D2+C2	6.86	7.51	6.22
Mean		6.62	6.63 (±0.261)	6.60

NPK		
111	6.14	
211	3.84	
112	4.10	(±0.523)
212	3.49	
Mean	4.39	(±0.261)

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65/B/5.4

CARROTS: SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser None	Fertiliser N1P1K1
		2ND HARVEST		
		(±0.696)	(±0.985)	
10	D1	11.92	11.05	12.79
20	D2	12.55	13.60	11.50
10	C1	12.42	12.44	12.40
20	C2	12.03	12.79	11.27
		(±0.492)	(±0.696)	
	D1+C1	12.17	11.74	12.60
	D2+C2	12.29	13.20	11.38
Mean		12.23	12.47	11.99
			(±0.492)	

NPK		
111	11.24	
211	6.49	
112	8.75	(±0.985)
212	6.98	
Mean	8.36	(±0.492)

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65/B/5.5

CARROTS: SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser None	Fertiliser N1P1K1
		MEAN OF 2 HARVESTS		
		(±0.484)	(±0.684)	
10	D1	8.93	7.98	9.88
20	D2	9.77	10.64	8.90
10	C1	9.60	9.51	9.69
20	C2	9.38	10.06	8.71
		(±0.342)	(±0.484)	
	D1+C1	9.26	8.74	9.78
	D2+C2	9.58	10.35	8.80
Mean		9.42	9.55 (±0.342)	9.30

NPK		
111	8.69	
211	5.17	
112	6.43	(±0.684)
212	5.23	
Mean	6.38	(±0.342)

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65/B/5.6

CARROTS: TOPS FROM SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser None	Fertiliser N1P1K1
		1ST HARVEST		
		(±0.738)	(±1.044)	
10	D1	6.98	4.78	9.17
20	D2	9.27	10.50	8.04
10	C1	7.61	6.30	8.92
20	C2	8.92	9.72	8.11
		(±0.522)	(±0.738)	
	D1+C1	7.30	5.54	9.04
	D2+C2	9.10	10.11	8.08
Mean		8.20	7.82 (±0.522)	8.56

NPK		
111	6.69	
211	4.43	
112	4.62	(±1.044)
212	4.26	
Mean	5.00	(±0.522)

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65/B/5.7

CARROTS: TOPS FROM SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser None	Fertiliser N1P1K1
		2ND HARVEST		
		(±0.848)	(±1.199)	
10	D1	10.77	8.62	12.92
20	D2	12.97	13.63	12.31
10	C1	10.84	8.95	12.73
20	C2	12.98	14.05	11.92
		(±0.600)	(±0.848)	
	D1+C1	10.80	8.78	12.82
	D2+C2	12.98	13.84	12.12
Mean		11.89	11.31 (±0.600)	12.47

NPK		
111	8.40	
211	5.91	
112	7.07	(±1.199)
212	6.75	
Mean	7.03	(±0.600)

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65/B/5.8

CARROTS: TOPS FROM SALEABLE ROOTS

Dung	Organic manure applied	Mean	Fertiliser None	Fertiliser N1P1K1
MEAN OF 2 HARVESTS				
		(±0.697)	(±0.986)	
10	D1	8.88	6.70	11.05
20	D2	11.12	12.07	10.18
10	C1	9.22	7.62	10.82
20	C2	10.95	11.89	10.01
		(±0.493)	(±0.697)	
	D1+C1	9.05	7.16	10.94
	D2+C2	11.04	11.98	10.10
Mean		10.04	9.57	10.52
			(±0.493)	

NPK		
111	7.54	
211	5.17	
112	5.85	(±0.986)
212	5.51	
Mean	6.02	(±0.493)

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65/B/5.9

GLOBE BEET

FERTILISER PLOTS

	N0	N1	N2	N3	Mean
			SALEABLE BULBS		
			(±0.541)		
Mean	5.80	11.76	13.70	14.15	11.35
			(±0.766)*		
P1K1	4.36	10.86	12.82	13.53	10.39
P2K2	7.23	12.66	14.56	14.77	12.31
			(±0.766)		(±0.383)
0	5.02	10.66	13.37	13.25	10.57
PT	6.56	12.86	14.02	15.05	12.12
			(1) and (2)		(±0.145)
S3	5.98	12.30	13.96	14.20	11.61
S4	5.61	11.22	13.43	14.10	11.09

* For use in horizontal and interaction comparisons only.

(1) (±0.579) For use in vertical and diagonal comparisons
(2) (±0.291) For use in horizontal and interaction comparisons

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65/B/5.10

GLOBE BEET

FERTILISER PLOTS

	N0	N1	N2	N3	Mean
			TOTAL PRODUCE		
		(±0.841)			
Mean	11.60	21.64	26.24	28.50	22.00
		(±1.190)*			
P1K1	8.87	19.85	23.84	26.52	19.77
P2K2	14.32	23.44	28.64	30.47	24.22
		(±1.190)			(±0.595)
0	10.32	20.06	25.58	27.32	20.82
PT	12.87	23.23	26.90	29.67	23.17
		(1) and (2)			(±0.304)
S3	12.13	22.81	27.02	29.29	22.81
S4	11.06	20.48	25.46	27.70	21.18

* For use in horizontal and interaction comparisons only.

(1) (±0.944) For use in vertical and diagonal comparisons
(2) (±0.607) For use in horizontal and interaction comparisons

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65/B/5.11

GLOBE BEET

DUNG PLOTS

	N0	N1	N2	N3	Mean
			SALEABLE BULBS		
Mean	12.33	14.55	15.78	16.70	14.84
P0K0	12.15	13.86	15.29	16.69	14.50
P1K1	12.50	15.25	16.27	16.71	15.18
D0	10.80	14.20	14.95	16.34	14.07
D1	12.11	12.88	15.44	15.80	14.06
D2	15.60	16.93	17.79	18.31	17.16
S3	12.52	15.01	15.80	16.89	15.06
S4	12.13	14.10	15.76	16.51	14.63
			TOTAL PRODUCE		
Mean	23.40	29.32	33.17	35.79	30.42
P0K0	22.60	27.16	31.86	34.56	29.05
P1K1	24.21	31.47	34.48	37.02	31.80
D0	20.48	28.12	31.80	34.39	28.70
D1	23.05	25.19	32.25	34.24	28.68
D2	29.62	35.84	36.84	40.15	35.61
S3	24.12	30.64	33.47	36.91	31.29
S4	22.69	27.99	32.87	34.67	29.56

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65/B/6.1

IRRIGATION EXPERIMENT

(WIR)

Revised 1963

The effects of irrigation and nitrogen - Woburn Butt Close 1965, the 15th year.

For details of previous cropping, treatments etc., see 'Details' 1962 and 'Results' 63/B/6, 64/B/6.

Rotation: The barley crop is now replaced by spring wheat, which receives 0.4 (N1), 0.8 (N2), 1.2 (N3), 1.6 (N4) cwt N as 'Nitro-Chalk' to quarter plots.

Lucerne: This is now replaced by Italian ryegrass. A test of 350 (N1K1) v 700 lb (N2K2) (16:0:16) for each cut is applied to half plots.

Basal applications:

Manures: Spring wheat: 240 lb (0:14:28) combine drilled, 40 cwt ground chalk.
Italian Ryegrass: 373 lb superphosphate.
Other crops as before.

Weedkillers: Spring wheat: Ioxynil and mecoprop ('Actril' P at 4 pints in 40 gals).
Italian Ryegrass: 2,4-D butoxyethylester at 7 oz a.e. in 40 gals.

Area harvested (Sub plot): Sugar beet - 0.0042, spring wheat - 0.0076, clover - 0.0058, ryegrass - 0.0058.

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RAINFALL AND IRRIGATION: INCHES

Week ending	Rain-fall	Sugar beet A	Sugar beet B	Sugar beet C	Spring wheat C	Clover A	Clover B	Clover C	Grass A	Grass B	Grass C
3 May	0.66										
10	0.42										
17	0.12										
24	0.43				0.50	0.50	-	0.50			
31	0.83	0.50	-	0.50					-	-	0.50
7 June	0.24										
14	0.84										
21	0.67										
28	0.37										
5 July	0.13	-	0.50	0.50	0.50	-	0.50	0.50	-	0.50	0.50
12	0.69	-	0.50	0.50	0.50	-	0.50	0.50	-	0.50	0.50
19	0.33										
26	1.86										
2 Aug	0.29										
9	0.81										
16	0.02										
23	0.55										
30	0.85										
Total	10.11	0.50	1.00	1.50	1.50	0.50	1.00	1.50	0.00	1.00	1.50

Cultivations, etc.:

Sugar beet: Ploughed: Oct 9, 1964. Salt applied: Jan 5, 1965. Basal compound and sulphate of ammonia applied: Mar 31. Seed drilled at 5 lb: Apr 2. Singled (early plots): May 17. Singled (late plots): June 2. Lifted: Oct 5.

Spring wheat: Ground chalk applied: Nov 10, 1964. Ploughed: Nov 11. Seed combine drilled at 180 lb: Mar 29, 1965. 'Nitro-Chalk' applied: Mar 30. Sprayed: May 11. Combine harvested: Sept 14. Variety: Opal.

Clover: Seed undersown in barley at 30 lb: Apr 27, 1964. Basal compound fertiliser applied: Feb 3, 1965. Cut 3 times: June 11, Aug 5, Oct 19.

Ryegrass: Ploughed: Nov 4, 1964. Basal P and first dressings of NK compound applied: Mar 16, 1965. Seed drilled at 40 lb: Mar 17. Sprayed: May 10. Cut five times: June 11, July 14, Aug 10, Sept 7, Oct 19. NK compound applied after first 4 cuts. Variety: Italian.

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Standard errors per plot.

Sugar beet.	Roots,	Whole plot:	0.574 or 3.3% (6 d.f.)
		1/2 plot:	0.613 or 3.5% (8 d.f.)
		Row strips:	0.587 or 3.3% (8 d.f.)
	Total sugar,	Whole plot:	1.87 or 3.0% (6 d.f.)
		1/2 plot:	2.65 or 4.3% (8 d.f.)
		Row strips:	1.59 or 2.6% (8 d.f.)
	Tops,	Whole plot:	0.974 or 5.3% (6 d.f.)
		1/2 plot:	1.938 or 10.5% (8 d.f.)
		Row strips:	0.664 or 3.6% (8 d.f.)
Spring wheat.	Grain,	Whole plot:	2.32 or 6.3% (5 d.f.)
		1/4 plot:	1.93 or 5.2% (30 d.f.)
Clover.	Dry matter, 1st cut.	Whole plot:	4.24 or 12.8% (6 d.f.)
		1/2 plot:	1.96 or 5.9% (8 d.f.)
	2nd cut.	Whole plot:	1.49 or 9.4% (6 d.f.)
		1/2 plot:	1.73 or 10.8% (8 d.f.)
	3rd cut.	Whole plot:	1.57 or 9.0% (6 d.f.)
		1/2 plot:	0.79 or 4.5% (8 d.f.)
	Total of 3 cuts.	Whole plot:	5.52 or 8.3% (6 d.f.)
		1/2 plot:	3.59 or 5.4% (8 d.f.)
Ryegrass.	Dry matter, 1st cut.	Whole plot:	1.25 or 6.3% (6 d.f.)
		1/2 plot:	0.99 or 5.0% (8 d.f.)
	2nd cut.	Whole plot:	2.10 or 7.0% (6 d.f.)
		1/2 plot:	1.76 or 5.8% (8 d.f.)
	3rd cut.	Whole plot:	1.09 or 5.6% (6 d.f.)
		1/2 plot:	2.27 or 11.7% (8 d.f.)
	4th cut.	Whole plot:	0.44 or 4.5% (6 d.f.)
		1/2 plot:	1.20 or 12.3% (8 d.f.)
	5th cut.	Whole plot:	1.13 or 8.0% (6 d.f.)
		1/2 plot:	1.27 or 9.0% (8 d.f.)
	Total of 5 cuts.	Whole plot:	3.34 or 3.6% (6 d.f.)
		1/2 plot:	3.63 or 3.9% (8 d.f.)

Errata to Results 64/B/6.1, 'Area harvested'. These were all sub plots and not as stated.

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65/B/6.4

SUMMARY OF RESULTS

SUGAR BEET

	O	A	B	C	Mean
ROOTS					
Mean (±0.331)	18.35	17.67	17.48	16.84	17.59
		(1) and (2)			(±0.177)
N1	18.46	17.08	16.98	16.06	17.15
N2	18.25	18.26	17.98	17.62	18.03
		(3) and (4)			(±0.170)
E	18.41	17.96	17.89	17.18	17.86
L	18.30	17.38	17.07	16.50	17.31
SUGAR %					
Mean	17.7	17.5	17.8	17.6	17.6
N1	17.6	17.6	17.8	17.5	17.6
N2	17.8	17.4	17.7	17.6	17.6
E	17.5	17.6	17.8	17.6	17.6
L	17.8	17.3	17.7	17.5	17.6

(1) (±0.415) (3) (±0.409) For use in horizontal and diagonal comparisons
(2) (±0.354) (4) (±0.339) For use in vertical and interaction comparisons

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SUGAR BEET

	O	A	B	C	Mean
TOTAL SUGAR					
Mean (±1.08)	64.9	61.8	62.0	59.2	62.0
		(1) and (2)			(±0.76)
N1	65.0	60.0	60.6	56.4	60.5
N2	64.8	63.6	63.5	62.1	63.5
		(3) and (4)			(±0.46)
E	64.5	63.3	63.7	60.5	63.0
L	65.3	60.3	60.4	57.9	61.0

(1) (±1.53) (3) (±1.26) For use in horizontal and diagonal comparisons
(2) (±1.53) (4) (±0.92) For use in vertical and interaction comparisons

TOPS					
Mean (±0.563)	18.60	18.12	18.89	18.34	18.49
		(1) and (2)			(±0.559)
N1	16.99	15.56	16.35	15.45	16.09
N2	20.21	20.69	21.43	21.22	20.89
		(3) and (4)			(±0.192)
E	18.41	18.68	18.84	19.00	18.73
L	18.79	17.57	18.94	17.67	18.24

(1) (±0.971) (3) (±0.624) For use in horizontal and diagonal comparisons
(2) (±1.119) (4) (±0.383) For use in vertical and interaction comparisons

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65/B/6.6

SPRING WHEAT

N

	1	2	3	4	Mean
		GRAIN			
		(1) and (2)			(±0.95)
O	32.8	38.1	36.8	35.8	35.9
C	34.8	42.0	38.7	35.2	37.7
Mean (±0.56)	33.8	40.1	37.8	35.5	36.8

Mean D.M. %: 76.7

		STRAW			
O	26.5	32.6	29.7	31.4	30.0
C	32.3	35.1	36.3	31.9	33.9
Mean	29.4	33.8	33.0	31.6	32.0

Mean D.M. %: 68.5

(1) (±1.17) For use in horizontal and diagonal comparisons

(2) (±0.79) For use in vertical and interaction comparisons

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CLOVER

	O	A	B	C	Mean
		1ST CUT*			
		(1) and (2)			(±0.57)
N1	8.0	32.0	31.9	34.6	34.1
N2	33.6	33.9	28.8	30.9	31.8
Mean (±2.45)	35.8	32.9	30.4	32.7	33.0

Mean D.M. %: 15.5

(1) (±2.57) For use in horizontal and diagonal comparisons

(2) (±1.13) For use in vertical and interaction comparisons

		2ND CUT			
		(1) and (2)			(±0.50)
N1	14.6	16.1	14.8	17.4	15.7
N2	15.8	13.6	16.5	18.8	16.1
Mean (±0.86)	15.2	14.8	15.6	18.1	15.9

Mean D.M. %: 16.8

(1) (±1.11) For use in horizontal and diagonal comparisons

(2) (±1.00) For use in vertical and interaction comparisons

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CLOVER

	O	A	B	C	Mean
		3RD CUT			
		(1) and (2)			(±0.23)
N1	17.2	16.8	17.2	17.4	17.1
N2	17.0	19.0	17.7	17.4	17.8
Mean (±0.91)	17.1	17.9	17.4	17.4	17.5

Mean D.M. %: 15.9

(1) (±0.96) For use in horizontal and diagonal comparisons

(2) (±0.46) For use in vertical and interaction comparisons

TOTAL OF 3 CUTS

		(1) and (2)			(±1.04)
N1	69.7	64.8	63.9	69.4	66.9
N2	66.5	66.5	63.0	67.0	65.7
Mean (±3.19)	68.1	65.7	63.4	68.2	66.3

Mean D.M. %: 16.1

(1) (±3.51) For use in horizontal and diagonal comparisons

(2) (±2.07) For use in vertical and interaction comparisons

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RYEGRASS

	O & A	B	C	Mean
1ST CUT				
	(1) and (2)	(3) and (4)		(±0.28)
N1K1	17.2	14.8	16.6	16.4
N2K2	22.9	23.2	23.2	23.0
Mean	20.0 (±0.51)	19.0 (±0.72)	19.9	19.7

Mean D.M. %: 15.0

(1) (±0.58) (3) (±0.82) For use in horizontal and diagonal comparisons

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

2ND CUT				
	(1) and (2)	(3) and (4)		(±0.51)
N1K1	28.8	27.5	28.8	28.5
N2K2	31.6	31.2	32.7	31.8
Mean	30.2 (±0.86)	29.3 (±1.21)	30.8	30.1

Mean D.M. %: 12.1

(1) (±0.99) (3) (±1.41) For use in horizontal and diagonal comparisons

(2) (±0.72) (4) (±1.02) For use in vertical and interaction comparisons

NOTE: All cuts O = A
1st cut O = A = B

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RYEGRASS

	O & A	B	C	Mean
3RD CUT				
	(1) and (2)	(3) and (4)		(±0.66)
N1K1	20.5	19.4	18.4	19.7
N2K2	20.2	19.7	17.0	19.3
Mean	20.4 (±0.44)	19.5	17.7 (±0.63)	19.5

Mean D.M. %: 12.8

(1) (±0.79) (3) (±1.12) For use in horizontal and diagonal comparisons

(2) (±0.93) (4) (±1.31) For use in vertical and interaction comparisons

4TH CUT				
	(1) and (2)	(3) and (4)		(±0.35)
N1K1	11.0	11.3	11.1	11.1
N2K2	8.2	8.7	8.3	8.4
Mean	9.6 (±0.18)	10.0	9.7 (±0.25)	9.7

Mean D.M. %: 13.1

(1) (±0.39) (3) (±0.55) For use in horizontal and diagonal comparisons

(2) (±0.49) (4) (±0.69) For use in vertical and interaction comparisons

NOTE: All cuts O = A
1st cut O = A = B

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RYEGRASS

	O & A	B	C	Mean
5TH CUT				
	(1) and (2)	(3) and (4)		(±0.37)
N1K1	14.8	15.5	13.8	14.7
N2K2	12.8	13.9	14.5	13.5
Mean	13.8 (±0.46)	14.7	(±0.65) 14.2	14.1

Mean D.M. %: 12.8

(1) (±0.59) (3) (±0.83) For use in horizontal and diagonal comparisons

(2) (±0.52) (4) (±0.73) For use in vertical and interaction comparisons

	TOTAL OF 5 CUTS			
	(1) and (2)	(3) and (4)		(±1.05)
N1K1	92.3	88.6	88.7	90.5
N2K2	95.9	96.7	95.6	96.0
Mean	94.1 (±1.36)	92.7	(±1.93) 92.2	93.2

Mean D.M. %: 13.2

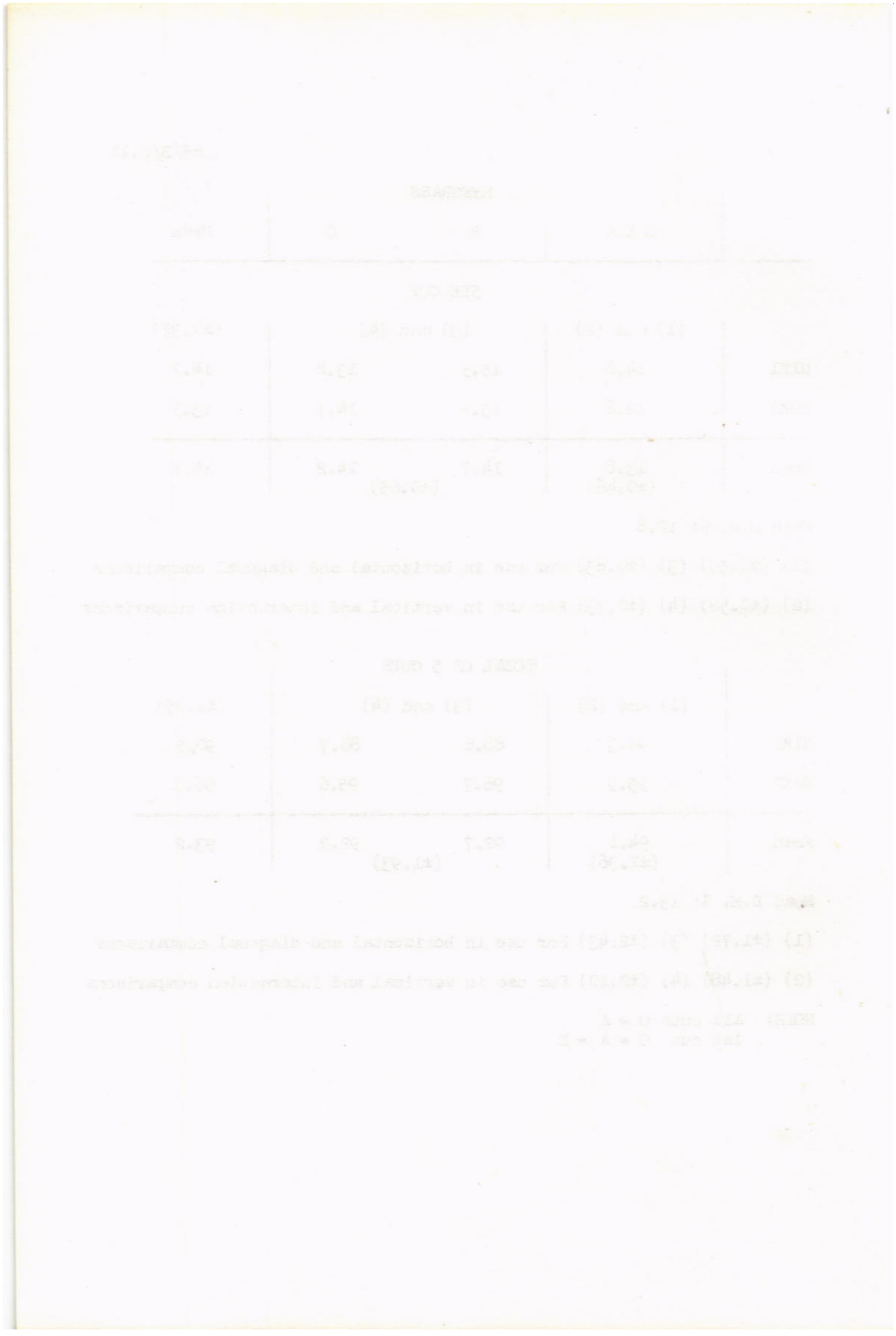
(1) (±1.72) (3) (±2.43) For use in horizontal and diagonal comparisons

(2) (±1.48) (4) (±2.10) For use in vertical and interaction comparisons

NOTE: All cuts O = A
1st cut O = A = B

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65/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 1965, the sixth 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, 63/B/8 and 64/B/7.

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

Treatments 4 and 5 (all crops) received 0.75 and 1.5 cwt P_2O_5 respectively in 1965 (as granular superphosphate).

Cultivations, etc. (both fields): Ploughed: Oct 27, 1964.
Potatoes: Fertilisers applied: Apr 8, 1965. Potatoes planted: Apr 14. Earthed up: June 17. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: July 1, July 27, Aug 10. Sprayed with undiluted BOV at 15 gals: Sept 2. Lifted: Oct 12.
Barley: Fertilisers applied: Feb 25, 1965. Seed drilled at 120 lb: Mar 17. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 19. Combine harvested: Sept 15.
Swedes: Fertilisers applied: May 10, 1965. Seed drilled at 2 lb: May 11. Singled: June 21. Lifted: Nov 24.

Standard errors per plot.
Sawyers I:

Potatoes, total tubers:	0.963 or 5.7% (11 d.f.)
Barley, grain:	1.75 or 4.5% (11 d.f.)
Swedes, roots:	2.233 or 11.8% (11 d.f.)

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65/B/7.2

SUMMARY OF RESULTS

POTATOES

Treat-ment	TOTAL TUBERS Great Field IV Mean	TOTAL TUBERS Sawyers I Mean	PERCENTAGE WARE Great Field IV Mean	PERCENTAGE WARE Sawyers I Mean
		(±0.681)		
1	15.33	13.89	96.7	96.4
2	18.86	15.71	96.7	98.1
3	19.53	18.31	96.7	97.0
4	19.88	18.31	97.2	96.9
5	20.84	18.70	95.1	97.6
6	18.03	17.18	96.3	97.0
7	17.11	16.87	97.0	96.7
8	17.11	16.49	97.2	97.7
9	17.42	16.41	97.5	97.7
10	16.53	15.14	97.4	96.8
11	17.46	16.99	97.2	96.7
12	17.77	16.98	97.2	96.8
Mean	17.99	16.75	96.9	97.1

BARLEY

	GRAIN		STRAW	
		(±1.24)		
1	27.2	37.4	36.6	30.1
2	30.0	39.3	35.3	31.8
3	26.7	39.1	30.9	34.0
4	24.8	40.6	27.8	32.1
5	28.8	43.2	47.1	37.5
6	31.6	38.8	31.8	29.2
7	29.1	38.7	30.7	32.0
8	26.5	39.9	32.2	32.4
9	30.1	39.0	37.9	31.4
10	25.0	37.1	31.8	31.3
11	29.6	38.4	30.0	29.6
12	28.5	38.0	32.5	30.2
Mean	28.2	39.1	33.7	31.8
Mean D.M. %:	73.5	76.5	84.2	87.4

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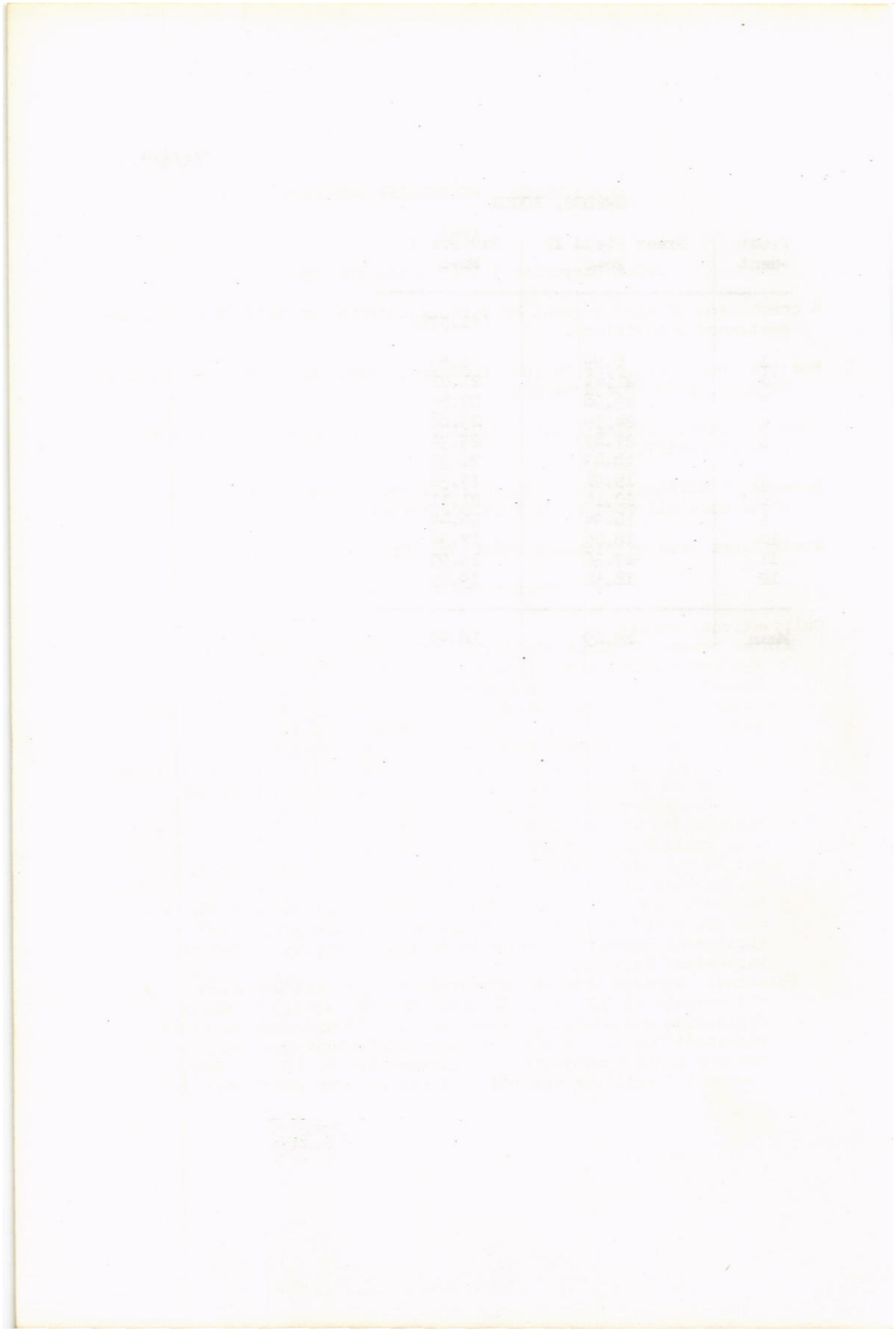
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SWEDES, ROOTS

Treat -ment	Great Field IV Mean	Sawyers I Mean
		(±1.579)
1	6.99	6.40
2	21.44	21.61
3	23.98	22.52
4	24.59	23.68
5	27.87	25.34
6	18.43	20.35
7	19.91	17.32
8	20.14	21.11
9	18.94	16.44
10	18.06	17.36
11	17.36	15.95
12	18.52	19.83
Mean	19.69	18.99

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CULTIVATION - WEEDKILLER ROTATION

(CW)

Great Harpenden I 1965 - the 5th 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, 63/B/10 and 64/B/9.

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

Because of difficulty in drilling close rows, winter beans on the T plots were all sown at 21 inch row spacing.

Weedkillers used on potatoes 1965: As 1964.

Operations in 1965

Cultivations, etc.:-

Winter beans: T plots rigid-tine cultivated 3 times: Oct 22, 1964. P,A and reserve plots ploughed: Oct 23. P,A and reserve plots disced: Oct 26. T plots disced: Oct 27. R plots rotary cultivated: Oct 29. Seed drilled at 275 lb: Nov 2. X and Y plots sprayed: Nov 9. Y plots sprayed: Mar 15, 1965. M and reserve plots tractor hoed: May 13. 11 ft at each end of all plots sprayed with menazon at 4 oz in 40 gals: June 14, and again at 6 oz in 37 gals: July 1. Combine harvested: Sept 28.

Winter wheat: Sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Oct 24, 1964. T plots rigid-tine cultivated 3 times: Dec 1. P,A and reserve plots ploughed: Dec 2. R plots rotary cultivated, P, T, A and reserve plots spring-tine cultivated, seed drilled at 185 lb: Dec 22. All plots harrowed: Apr 13, 1965. 'Nitro-Chalk' applied: Apr 15. H sub plots and reserve plots sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): May 6. Combine harvested: Sept 13.

Potatoes: Sprayed with aminotriazole at 4 lb and ammonium thiocyanate at 3.7 lb in 40 gals: Oct 24, 1964. T plots rigid-tine cultivated 3 times: Dec 1. P and reserve plots ploughed: Dec 3. R plots rotary cultivated: Dec 22. T,P and reserve plots spring-tine cultivated: Apr 6, 1965. Basal compound fertiliser applied, T,P and reserve plots spring-tine

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cultivated, A plots rotary cultivated twice, R plots once, potatoes machine planted: Apr 7. Ridges rolled: May 8. M and reserve plots chain harrowed, X and Y plots sprayed: May 10. M and reserve plots grubbed: May 11. M and reserve plots weeded mechanically: May 31. M and reserve plots grubbed second time: June 2. M and reserve plots earthed up: June 21. Sprayed 3 times with mancozeb at 1.2 lb in 37 gals: July 1, July 28, Aug 10. Sprayed with diquat (Reglone at 4 pints in 40 gals): Sept 6. Haulm destroyed mechanically: Sept 13. Lifted: Oct 11.

Barley: All plots spring-tine cultivated twice, sprayed with sodium trichloroacetate at 18 lb in 40 gals: Oct 22, 1964. All plots spring-tine cultivated: Nov 25. Sprayed second time with sodium trichloroacetate at 18 lb in 40 gals: Nov 26. All plots spring-tine cultivated: Dec 22. T plots rigid-tine cultivated twice, P and reserve plots ploughed, R plots rotary cultivated: Jan 19, 1965. A plots rotary cultivated, all other plots spring-tine cultivated, seed drilled at 155 lb: Mar 29. H sub-plots and reserve plots sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 13. Combine harvested: Sept 2.

Standard errors per plot.

Winter beans.	Grain, whole plot:	2.81 or 11.3%	(8 d.f.)
Potatoes.	Total tubers, whole plot:	0.590 or 3.0%	(8 d.f.)
	sub plot:	0.755 or 3.9%	(9 d.f.)
Barley.	Grain, whole plot:	1.89 or 4.8%	(8 d.f.)
	sub plot:	0.99 or 2.5%	(9 d.f.)
Winter wheat.	Grain, whole plot:	1.70 or 3.6%	(11 d.f.)
	sub plot:	1.43 or 3.0%	(12 d.f.)

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SUMMARY OF RESULTS

	P	R	T	Mean
WINTER BEANS				
		GRAIN		
Mean (±1.15)	24.4	24.7	25.8	25.0
		(±1.99)		(±1.15)
M	28.5	29.4	24.6	27.5
X	23.4	22.2	24.3	23.3
Y	21.3	22.3	28.6	24.1
	AY	Reserve M		
	23.0	27.2		

General mean: 25.2

Mean D.M. %: 72.7

WINTER WHEAT				
		GRAIN		
Mean (±0.69)	47.8	47.6	47.7	47.7
1964				
M (±1.20)	47.6	45.9	48.9	47.5 (±0.69)
X (±0.85)	47.9	48.4	47.1	47.8 (±0.49)
1965		(1) and (2)		(±0.34)
-	49.5	50.2	49.7	49.8
H	46.0	45.0	45.8	45.6
	AX-	AXH	Reserve XH	
	47.5	46.6	46.8	

General mean: 47.5

Mean D.M. %: 76.8

(1) (±0.58) For use in vertical and interaction comparisons
(2) (±0.81) For use in horizontal and diagonal comparisons

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POTATOES

	P	R	T	Mean
TOTAL TUBERS				
Mean (±0.241)	18.90	19.37	19.92	19.40
1964		(±0.417)		(±0.241)
M	19.05	19.83	20.30	19.72
X	19.29	18.97	20.09	19.45
Y	18.37	19.32	19.38	19.02
	AX	Reserve M		
	19.19	20.48		

General mean: 19.56

% WARE				
Mean	97.4	97.7	97.7	97.6
M	97.7	97.8	98.2	97.9
X	96.7	97.4	97.9	97.3
Y	97.8	97.9	97.1	97.6
	AX	Reserve M		
	98.0	97.8		

General mean: 97.7

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65/B/8.5

BARLEY

GRAIN

	P	R	T	Mean
Mean (±0.77)	39.1	40.5	39.8	39.8
1964		(±1.34)		(±0.77)
M	38.1	39.4	40.7	39.4
X	39.4	41.9	39.0	40.1
Y	39.9	40.3	39.7	40.0
1965		(1) and (2)		(±0.23)
-	39.4	41.2	40.7	40.4
H	38.8	39.9	38.9	39.2

AX-	AXH	Reserve MH
42.5	40.4	39.2

General mean: 39.8

Mean D.M. %: 76.6

(1) (±0.40) For use in vertical and interaction comparisons
(2) (±0.82) For use in horizontal and diagonal comparisons

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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 1965, the sixth year.

For history, rotation etc., see 'Results' 60/B/11, 61/B/11, 62/B/11, 63/B/11 and 64/B/10.

Area of each plot: 0.0482. Area harvested: Sugar beet - roots - 0.0121, tops - 0.0040, barley - 0.0229.

Nitrogen is now applied to the barley at 0.6 (N1), 0.85 (N2), 1.10 cwt N (N3), 0.6 cwt N being applied as basal fertiliser (20:10:10) combine drilled, the remainder as 'Nitro-Chalk' broadcast in the seedbed.

Basal applications: Manures: as above for barley, as before for sugar beet. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals) to barley.

Cultivations, etc.:

Sugar beet: R plots rotary cultivated: Sept 29, 1964. T plots rigid-tine cultivated twice: Nov 2. P plots ploughed: Nov 19. Salt applied: Jan 5, 1965. Basal NPK applied, R plots rotary cultivated, T and P plots spring-tine cultivated: Apr 1. All plots harrowed and rolled: Apr 2. Seed drilled at 5 lb: Apr 3. All plots tractor hoed: May 13 and June 4. Singled: May 20. Lifted: Nov 4.

Barley: T plots rigid-tine cultivated, P plots ploughed: Nov 20, 1964. R plots rotary cultivated: Nov 25. 'Nitro-Chalk' applied, all plots spring-tine harrowed, seed drilled at 155 lb: Mar 11, 1965. Sprayed: May 11. Combine harvested: Aug 23.

Standard errors per plot.

Sugar beet.	Roots:	1.768 or 9.1% (14 d.f.)
	Total sugar:	7.05 or 9.8% (14 d.f.)
	Tops:	0.940 or 10.0% (14 d.f.)
Barley.	Grain:	1.40 or 3.4% (8 d.f.)

For erratum to 'Results' 61/B/11 see page 65/B/9.3.

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65/B/9.2

SUMMARY OF RESULTS

P	R	T	Mean
	SUGAR BEET		
	ROOTS		
	(±0.722)		
19.34	19.70	19.06	19.36
	SUGAR %		
18.7	18.3	18.8	18.6
	TOTAL SUGAR		
	(±2.88)		
72.5	72.0	71.7	72.1
	TOPS		
	(±0.384)		
9.00	9.85	9.50	9.45
	BARLEY		
	GRAIN		

	N1	N2	N3	Mean
		(±0.99)		(±0.57)
P	40.5	42.5	44.8	42.6
R	41.1	42.1	44.2	42.5
T	38.7	42.9	40.6	40.8
Mean (±0.57)	40.1	42.5	43.2	41.9

Mean D.M.%: 80.5

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Errata to Results 61/B/11.

Page 61/B/11.1

Delete all references to Potatoes after 'area harvested' and substitute:-

Treatments:

Potatoes: All combinations of:-

Cultivations before planting: Ploughed and spring-tine cultivated (P), rotary cultivated (R), rigid-tine and spring-tine cultivated (T).

Treatments after planting: Normal cultivations (M), simazine* applied after planting (X), simazine* applied after early cultivations (Y).

Basal dressing per acre:

Potatoes 10 cwt compound fertiliser, 17% N, 11% P_2O_5, 22% K_2O.

Cultivations, etc.:

Potatoes: All plots ploughed: Dec 12, 1960. P plots re-ploughed, T plots rigid-tine cultivated twice: Feb 24, 1961. P and T plots spring-tine cultivated twice: Mar 16. P and T plots rolled and then spring-tine cultivated twice, R plots rotary cultivated: Mar 23. Basal dressing applied, potatoes machine planted: Mar 24. Simazine applied on rolled bouts to X plots: Mar 31. M and Y plots earthed up: May 2. Y plots earthed up and sprayed with simazine: May 19. X plots grubbed twice+: May 30. M and X+ plots earthed up: June 14. Sprayed with undiluted BCV at 12 gallons per acre: Sept 18. Lifted: Sept 21. Variety: Majestic.

+ Becuase of failure of X treatment.

Page 61/B/11.2

Standard errors per plot.

Potatoes, total tubers replace values shown by 0.925 tons per acre on 15.6% (8 d.f.)

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Errata to 61/B/11.2 continued

65/B/9.4

SUMMARY OF RESULTS

Potatoes Total tubers. Replace tables printed by:

	P	R	T	Mean
		TOTAL TUBERS: TONS PER ACRE		
		(±0.654)		(±0.378)
N	6.86	7.54	7.46	7.28
Sx	2.37	2.61	1.28	2.08
Sy	9.33	8.14	7.89	8.45
Mean (±0.378)	6.18	6.09	5.54	5.93
		PERCENTAGE WARE (1 1/2'' RIDDLE)		
N	91.3	89.1	90.1	90.1
Sx	81.6	81.1	74.1	78.9
Sy	92.9	88.4	90.6	90.6
Mean	88.6	86.2	84.9	86.5

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65/C/1.1

LEVELS OF K AND Mg

(LM and WAC)

K and Mg - Rothamsted (R) Sawyers I the seventh year, barley 1965, and Woburn (W) Stackyard Series C the sixth year, potatoes and sugar beet 1965.

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

	Area of each plot:	Area harvested:
Sawyers I (R):	0.0212	0.0141
Stackyard Series C (W):	0.0011	0.0011

Treatments: All combinations of:-

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

	K0	K1	K2
1962	24	95	165
1963	none	71	142
1964	none	91	182
1965	none	68	136

Stackyard Series C (W): None (K0), 95 (K1), 190 lb (K2), applied in 1962, 1963, 1964 and 1965. All K as sulphate of potash.

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

In addition magnesium-free calcium carbonate was applied to blocks on Sawyers I (R) in 1959 and 1962 as follows:

1959: 10, 40 cwt (CA1, CA2)
1962: 38, 76 cwt (CA1, CA2)

Basal dressings: Sawyers I (R): 0.5 cwt P_2O_5 as triple superphosphate in seedbed, 0.5 cwt N as 'Nitro-Chalk' combine drilled.
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 the seedbed. 10 cwt magnesium-free calcium carbonate.

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Cultivations, etc.:

Sawyers I (R): Ploughed: Nov 21, 1964. Fertilisers applied: Feb 26, 1965. Seed drilled at 160 lb: Mar 17. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 15. Combine harvested: Sept 6. Variety: Maris Badger.

Stackyard Series C (W):

Potatoes: First dressing of P, K and Mg applied, plots dug: Nov 25, 1964. Magnesium-free calcium carbonate applied: Dec 22. Second dressing of P, K and Mg and all N applied, plots rotary cultivated, potatoes planted: Apr 9, 1965. Sprayed with dimethoate at 6 oz in 40 gals: May 21. Sprayed with Bordeaux mixture at 7 lb plus malathion and DDT Kil (at 12 fluid oz in 50 gals): July 16. Sprayed with Bordeaux mixture at 10 lb in 40 gals: Aug 5. Lifted: Sept 9. Variety: King Edward.

Sugar beet: First dressing of P, K and Mg applied, plots dug: Nov 25, 1964. Magnesium-free calcium carbonate applied: Dec 22. Second dressing of P, K and Mg and all N applied, plots rotary cultivated, seed drilled at 7 lb: Apr 9, 1965. Sprayed with DDT at 15 oz in 40 gals: May 14. Sprayed with dimethoate at 6 oz in 40 gals: May 21. Singled: June 2. Sprayed with malathion and DDT (Kil at 12 fluid oz in 50 gals): July 16. Lifted: Oct 14. Variety: Klein E.

NOTE: For details of previous years' results see 'Results' 60/Ci/3, 61/C/7, 62/C/6, 63/C/1, 64/C/1.

Erratum to 'Results' 63/C/1.1 and 64/C/1.4. The rates of application of magnesium-free calcium carbonate as follows:

1959: 10, 40 cwt (CA1, CA2)
1962: 38, 76 cwt (CA1, CA2),

and not as stated.

Standard errors per plot.

Sawyers I (R):

Barley, Grain:

Sub plot: 1.96 or 4.8% (48 d.f.)

Stackyard Series C (W):

Potatoes, Total tubers: 0.283 or 2.0% (8 d.f.)

Sugar beet, Roots: 0.763 or 7.1% (8 d.f.)
Total sugar: 2.37 or 7.0% (8 d.f.)
Tops: 0.903 or 4.2% (8 d.f.)

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65/C/1.3

SUMMARY OF RESULTS

Sawyers I (R)

BARLEY

GRAIN

	K0	K1	K2	MG0	MG1	MG2	Mean
		(±0.57)*			(±0.57)*		
CA1	40.3	42.7	41.4	40.7	41.5	42.2	41.5
CA2	35.9	41.8	41.1	39.2	39.4	40.1	39.6
					(±0.69)		(±0.40)
		K0		37.6	38.0	38.6	38.1
		K1		41.8	41.9	43.0	42.2
		K2		40.5	41.4	41.9	41.3
		Mean (±0.40)		39.9	40.5	41.2	40.5

Mean D.M. %: 69.9

* For use in horizontal and interaction comparisons only.

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65/C/1.4

Sawyers I (R)

BARLEY

STRAW

	K0	K1	K2	MG0	MG1	MG2	Mean
CA1	35.6	42.0	42.3	40.0	39.8	40.2	40.0
CA2	37.8	42.9	44.2	41.4	42.2	41.3	41.6
		K0		35.9	36.2	37.9	36.7
		K1		43.2	42.2	41.9	42.4
		K2		42.8	44.5	42.5	43.3
		Mean		40.7	41.0	40.8	40.8

Mean D.M. %: 86.1

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65/C/1.5

Stackyard Series C (W)

POTATOES, TOTAL TUBERS

	MG0	MG1	MG2	Mean
		(±0.200)		(±0.116)
K0	6.35	6.65	5.20	6.07
K1	15.97	18.26	16.97	17.07
K2	17.96	20.79	20.39	19.71
Mean (±0.116)	13.43	15.23	14.18	14.28

SUGAR BEET, ROOTS

		(±0.539)		(±0.311)
K0	6.01	6.05	7.35	6.47
K1	11.88	12.47	12.87	12.41
K2	12.88	12.89	13.97	13.24
Mean (±0.311)	10.25	10.47	11.40	10.71

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65/C/1.6

Stackyard Series C (W)

SUGAR BEET, SUGAR %

	MG0	MG1	MG2	Mean
K0	15.1	15.3	15.0	15.1
K1	15.6	15.9	16.0	15.8
K2	15.9	15.5	16.6	16.0
Mean	15.5	15.6	15.9	15.6

SUGAR BEET, TOTAL SUGAR

		(±1.68)		(±0.97)
K0	18.1	18.4	22.1	19.5
K1	37.0	39.7	41.2	39.3
K2	40.9	40.0	46.4	42.4
Mean (±0.97)	32.0	32.7	36.5	33.8

SUGAR BEET, TOPS

		(±0.639)		(±0.369)
K0	16.77	17.46	19.15	17.79
K1	24.21	24.90	23.42	24.18
K2	22.42	20.74	24.31	22.49
Mean (±0.369)	21.13	21.03	22.29	21.49

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INTENSIVE BARLEY GROWING EXPERIMENT

(IB)

Little Knott I - 1965, the fifth year

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

Area of each plot: 0.0212. Area harvested: 0.0139.

Basal applications: Manures as 1964.
Insecticide: Spring beans: Menazon at 0.25 lb in 40 gals.
Weedkillers: Oats: MCPA at 1.12 lb plus dicamba at 0.8 lb in 40 gals. Barley: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals). Winter wheat: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals and at 6 pints in 40 gals).

Cultivations, etc.: Ploughed: Oct 13, 1964. All plots except winter wheat chisel ploughed: Dec 23.
Spring beans: Seed placement drilled at 200 lb (rows spaced at 10.5 ins): Feb 18, 1965. Sprayed: June 4. Combine harvested: Sept 29.
Oats: Seed combine drilled at 170 lb, 'Nitro-Chalk' applied: Mar 15, 1965. Sprayed: May 19. Combine harvested: Sept 29.
Spring wheat: Seed combine drilled at 190 lb: Mar 30, 1965. 'Nitro-Chalk' applied: Mar 31. Combine harvested: Sept 10.
Barley: 'Nitro-Chalk' applied: Mar 15, 1965. Seed combine drilled at 140 lb: Mar 29. Sprayed: May 11. Combine harvested: Sept 10.
Winter wheat: Seed combine drilled at 155 lb: Oct 23, 1964. 'Nitro-Chalk' applied: Mar 11, 1965. Sprayed twice: Apr 23 and May 13. Combine harvested: Sept 10.

NOTES: (1) Yields were taken only for sequences 1, 2, 3, 6, 7, 8 and 9.
(2) Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made in spring and summer. 1000 corn weights were estimated on selected barley plots.
(3) For details of the previous years' results see 'Results' 61/C/8, 62/C/7, 63/C/2 and 64/C/2.

Standard errors per plot. Grain:

Spring wheat (6 and 8):	3.67 or 10.8% (9 d.f.)
Barley (1,2,3,7):	2.82 or 7.5% (15 d.f.)

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SUMMARY OF RESULTS

GRAIN

WINTER WHEAT 9

Crop in 1961			SW		
Crop in 1962			WW		
Crop in 1963			WW		
Crop in 1964			WW		
	N0	N1	N2	N3	Mean
	22.1	20.6	26.5	32.4	25.4

Mean D.M. %: 72.3

SPRING WHEAT 6 AND 8

Crop in 1961			SW		SW	
Crop in 1962			SW		SW	
Crop in 1963			SW		Be	
Crop in 1964			SW		O	
	N0	N1	N2	N3	N2	Mean
	25.8	27.3	34.9	34.3	37.2	33.9
		(±2.59)			(±1.30)	

Mean D.M. %: 69.6

BARLEY 1,2,3 AND 7

Crop in 61 62 63 64	N0	N1	N2	N3	Mean
		(±1.99)			(±1.00)
O Be B B	24.5	39.7	37.4	37.5	34.8
SW O Be B	37.0	42.3	42.6	38.7	40.1
O SW O Be	41.0	46.2	38.8	35.9	40.5
B B B B	27.4	36.9	40.3	37.7	35.6
Mean (±1.00)	32.5	41.3	39.8	37.5	37.7

Mean D.M. %: 71.8

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65/C/3.1

LONG TERM LIMING EXPERIMENT - BARLEY 1965

(LL and WLL)

Rothamsted Sawyers I and Woburn Stackyard Series C - the fourth year.

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

Area of each plot: 0.0289. Area harvested: 0.0129.

The comparison of broadcasting of powder fertiliser and placement drilling of compound (0: 14: 28) is discontinued.

Basal applications: 0.5 cwt N as 'Nitro-Chalk' combine drilled. Mecoprop/2,4-D (Methoxone Extra at 6 pints in 34 gals on Sawyers I (R) and at 6 pints in 40 gals on Stackyard Series C (W)).

Cultivations, etc.:
Sawyers I (R): Ploughed: Sept 18, 1964. Fertilisers applied: Mar 1, 1965. Seed drilled at 156 lb: Mar 17. Sprayed: May 19. Combine harvested: Sept 5. Variety: Maris Badger.
Stackyard Series C (W): Rotary cultivated: Oct 14 and 27, 1964. Fertilisers applied, seed drilled at 140 lb: Mar 29, 1965. Sprayed: May 11. Combined harvested: Aug 28. Variety: Maris Badger.

Standard errors per plot.	Grain:
Sawyers I (R):	8.68 or 23.0% (15 d.f.)
Stackyard Series C (W):	0.96 or 2.4% (15 d.f.)

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65/C/3.2

SUMMARY OF RESULTS

SAWYERS I (R)

GRAIN

	CA0	CA2	CA4	CA8	Mean
Mean (±3.07)	25.9	41.8	41.7	41.3	37.7
		(±4.34)			(±2.17)
-	24.2	41.2	41.1	40.7	36.8
P	27.6	42.4	42.4	41.8	38.5
-	29.6	42.7	42.7	41.9	39.2
K	22.2	40.9	40.7	40.7	36.1

	-	P
	(±3.07)	
-	39.5	39.0
K	34.2	38.1

Mean D.M.%: 75.8

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65/C/3.3

STACKYARD SERIES C (W)

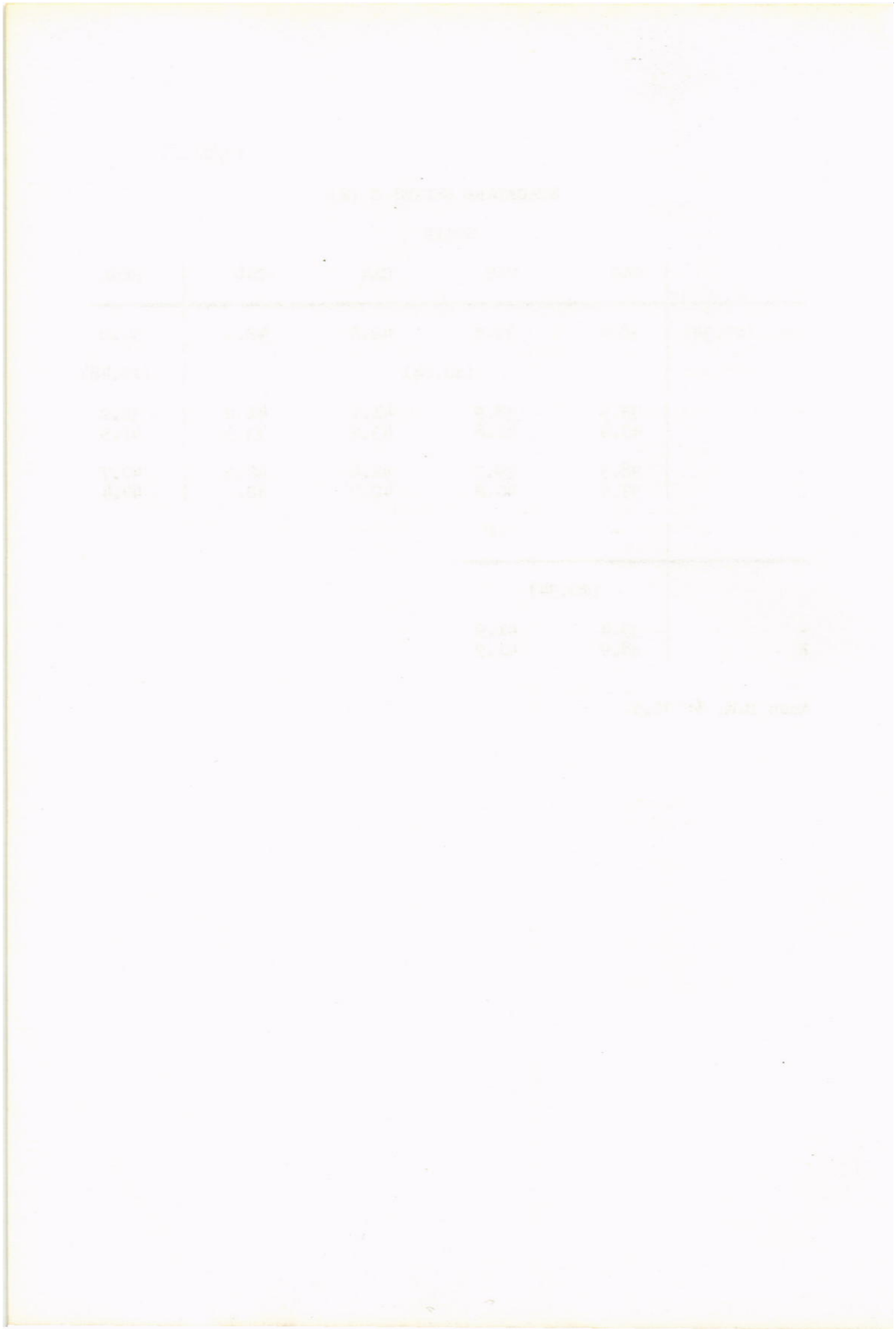
GRAIN

	CA0	CA2	CA4	CA8	Mean
Mean (±0.34)	38.0	39.7	42.2	42.4	40.6
		(±0.24)			(±0.48)
-	35.5	38.9	41.1	41.2	39.2
P	40.4	40.6	43.2	43.5	41.9
-	38.5	39.3	42.4	42.6	40.7
K	37.5	40.2	42.0	42.1	40.4

	-	P
	(±0.34)	
-	39.4	41.9
K	38.9	41.9

Mean D.M. %: 76.6

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65/C/4.1

METHODS OF APPLICATION OF FERTILISER 1964 - 65

(AY and WBC)

Methods of application of fertiliser - Rothamsted (R) Whittlocks and Woburn (W) Broadmead II, 1965 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 1965:

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 1964:

2. Levels of compound 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 1965: NPK: F0, F1, F2 as above to plots receiving no treatment in 1964.

Basal applications: Manures: None. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals).

Cultivations, etc.:

Whittlocks (R): Chisel ploughed twice: Oct 5 and 6, 1964. PK applied, seed drilled at 185 lb: Oct 22. 'Nitro-Chalk' applied - 1st half dressing: Mar 31, 1965. Sprayed, 'Nitro-Chalk' applied - 2nd half dressing: Apr 30. Combine harvested: Sept 14. Variety: Cappelle. Previous crops: Spring wheat 1963, potatoes 1964.

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Broadmead II (W): Chisel ploughed twice: Oct 17 and 19, 1964. PK applied: Oct 20. Seed drilled at 180lb: Oct 22. 'Nitro-chalk' applied - 1st half dressing: Apr 6, 1965, 2nd half dressing: Apr 27. Sprayed: May 6. Combine harvested: Sept 15. Variety: Cappelle. Previous crops: Barley 1963, potatoes 1964.

NOTES: (1) For previous year's results see 'Results' 64/C/5.
(2) Green crop and grain and straw samples were taken for NPK and dry matter determination.
(3) On Whittlocks (R) two plots F0P11 and F0BR11 were damaged by birds. Estimated values have been used in the analysis. Severe lodging had occurred by June on all plots except those receiving no fertiliser in 1965.

Standard errors per plot. Grain:
Whittlocks (R): 2.72 or 8.7% (19 d.f.)
Broadmead (W): 3.39 or 10.9% (21 d.f.)

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65/C/4.3

SUMMARY OF RESULTS

GRAIN

WHITTLOCKS (R)

	B	P	BR	Mean
		(±1.57)		(±0.91)
F0	33.6	32.7	29.1	31.8
F1	31.0	33.2	33.3	32.5
F2	28.6	30.4	28.4	29.2
Mean	31.1	32.1 (±0.91)	30.2	31.2

	L1	L2	L3
		(±1.57)	
F0	30.3	32.1	33.0
F1	33.6	32.5	31.4
F2	29.3	29.0	29.1
Mean	31.1	31.2 (±0.91)	31.2
		(±1.57)	
B	29.0	32.0	32.4
P	32.0	31.2	33.1
BR	32.3	30.4	28.0

BROADMEAD II (W)

	B	P	BR	Mean
		(±1.96)		(±1.13)
F0	38.9	37.5	35.2	37.2
F1	26.4	26.8	31.4	28.2
F2	27.6	27.9	24.6	26.7
Mean	31.0	30.7 (±1.13)	30.4	30.7

	L1	L2	L3
		(±1.96)	
F0	41.7	37.4	32.6
F1	29.6	27.7	27.1
F2	26.5	28.3	25.2
Mean	32.6	31.1 (±1.13)	28.3
		(±1.96)	
B	31.3	33.2	28.5
P	32.0	32.2	27.9
BR	34.6	28.0	28.5

Plots receiving no fertiliser in 1964

F0	F1	F2	Mean
24.1	36.2 (±1.57)	31.7	31.2

F0	F1	F2	Mean
42.9	28.8 (±1.96)	24.3	30.7

General mean	31.1	31.0
Mean D.M. %:	78.2	79.3

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65/C/4.4

STRAW

WHITTLOCKS (R)

	B	P	BR	Mean
F0	40.8	37.4	32.1	36.8
F1	45.0	44.1	50.4	46.5
F2	42.6	44.3	49.4	45.5
Mean	42.8	41.9	44.0	42.9

	L1	L2	L3
F0	27.9	36.0	46.4
F1	46.5	50.0	43.0
F2	47.7	46.9	41.8
Mean	40.7	44.3	43.8

B	40.9	45.2	42.4
P	39.9	44.1	41.9
BR	41.4	43.6	47.0

BROADMEAD II (W)

	B	P	BR	Mean
F0	35.7	36.7	38.9	37.1
F1	26.7	33.1	27.9	29.2
F2	37.4	33.7	37.9	36.3
Mean	33.3	34.5	34.9	34.2

	L1	L2	L3
F0	35.7	40.1	35.5
F1	26.2	31.5	29.9
F2	30.4	38.1	40.4
Mean	30.8	36.6	35.3

B	27.1	36.4	36.4
P	33.4	38.1	31.9
BR	31.9	35.3	37.6

Plots receiving no fertiliser in 1964

	F0	F1	F2	Mean
	28.9	41.7	39.4	42.9
	38.1	32.7	34.0	34.2

General mean 42.2 34.4

Mean D.M. %: 78.2 79.4

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65/C/5.1

METHODS OF APPLICATION OF FERTILISER, 1965 - 1966

(WBT)

Methods of application of fertiliser - Woburn Broadmead I, 1965 the first year - potatoes.

Design: 3 randomised blocks of 12 plots.

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

Treatments: None (I0) - 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	(I1)
1.33	1.33	2.03	(I2)
2.00	2.00	3.07	(I3)

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 1966 wheat crop, viz. PK broadcast on the seedbed and 'Nitro-Chalk' as spring dressing to supply:
N, P_2O_5 and K_2O at levels as (I0), (I1), (I2) above.

Basal applications: Manures: None. Weedkiller: Linuron at 2 lb plus paraquat at 0.75 lb ion in 40 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals.

Cultivations, etc.: Ploughed: Dec 10, 1964. BR fertilisers applied to ploughed land, all plots rotary cultivated: Apr 1, 1965. B fertilisers applied, potatoes machine planted: Apr 8. Sprayed (weedkiller): May 10, fungicide: July 3 and 16. Sprayed with diquat (Reglone at 4 pints in 34 gals): Aug 17. Lifted: Sept 28. Variety: King Edward. Previous crops: Winter wheat 1963, barley 1964.

Standard error per plot.
Total tubers: 0.933 or 8.5% (24 d.f.)

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SUMMARY OF RESULTS

	L0	L1	L2	L3	Mean
		TOTAL TUBERS			
			(±0.538)		(±0.311)
B		9.74	12.96	14.86	12.52
P		13.14	15.42	14.85	14.47
BR		10.09	11.53	14.37	12.00
Mean (±0.311)	5.11	10.99	13.30	14.69	11.02*
		% WARE			
B		89.9	94.5	94.7	93.0
P		91.4	95.3	94.4	93.7
BR		88.9	93.8	93.6	92.1
Mean	76.8	90.1	94.5	94.2	88.9*

* General mean

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65/C/6.1

GRASS

(AF)

Levels of N and K - Harwoods Piece 1965, the 8th 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, 63/C/7 and 64/C/6.

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

The 1964 sowing was abandoned and the plots resown with Meadow Fescue S53 at 24 lb and Scots Timothy at 16 lb.

Cultivations, etc.: Rotary cultivated: Apr 5, 1965. First N and K dressings applied: Apr 7. Grass resown: Apr 26. Sprayed with 2,4-D butoxyethylester at 7 oz a.e. in 40 gals: June 2. Cut twice: July 21, Oct 4. N and K applied after first cut.

NOTE: Samples were taken for yield and N, P and K determinations.

Standard errors per plot. Dry matter:

1st cut:	2.38 or 9.7% (33 d.f.)
2nd cut:	4.10 or 13.3% (33 d.f.)
Total of 2 cuts:	5.34 or 9.6% (33 d.f.)

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65/C/6.2

SUMMARY OF RESULTS

DRY MATTER

N	0	1	1	1	2	2	2	3	3	3	3	3	
P	1	1	1	1	1	1	1	1	1	1	0	2	
K	0	0	1	2	0	1	2	0	1	2	2	2	Mean
1ST CUT	13.7	21.4	23.5	23.4	22.1	25.6 (±1.19)	26.2	21.9	28.3	28.2	29.2	29.7	24.4
2ND CUT	19.7	28.7	29.5	27.8	32.9	34.7 (±2.05)	33.6	31.8	30.4	33.3	36.9	32.3	31.0
TOTAL OF 2 CUTS	33.4	50.1	53.0	51.2	55.0	60.3 (±2.67)	59.9	53.8	58.6	61.5	66.1	62.0	55.4

Mean D.M. %: 15.7

Mean D.M. %: 20.2

Mean D.M. %: 18.0

Treatment symbols:

N 0 1 2 3	0.0 0.3 0.6 0.9	cwt N as 'Nitro-Chalk' 21
P 0 1 2	0.0 0.6 1.2	cwt P_2O_5 as Granular Superphosphate
K 0 1 2	0.0 0.3 0.6	cwt K_2O as Granular Muriate of Potash.

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65/C/7.1

DECLINE OF TAKE-ALL

(AO)

The effect of crop sequences on the decline of take-all (Ophiobolus graminis) - Great Field I 1965, the third year.

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

Area of each plot: 0.0145. Area harvested: 0.0092.

Treatments: 6 crop sequences. For details see 'Results' 63/C/8.1.

Basal applications: Manures - as 1964. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals) to winter wheat.

Cultivations, etc.: Ploughed: Oct 23, 1964. Winter wheat drilled at 160 lb: Oct 27. 'Nitro-Chalk' applied to winter wheat: Mar 11, 1965. Oats drilled at 170 lb, 'Nitro-Chalk' applied to oats: Mar 15. Winter wheat sprayed: Apr 30. Combine harvested: Winter wheat - Aug 26, oats - Sept 10.

NOTES: (1) Yields were taken for winter wheat only.
(2) Estimates were made on 6 occasions of the incidence of take-all and on 2 occasions of the incidence of eyespot (Cercosporella herpotrichoides).
(3) For details of the previous years' results see 'Results' 63/C/8 and 64/C/7.

Standard error per plot.
Grain: 2.34 or 7.3% (8 d.f.)

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65/C/7.2

SUMMARY OF RESULTS

WINTER WHEAT GRAIN

Crop in						
1959	W	W	W	WS	O	
1960	W	O	O	W	W	
1961	WS	WS	Be	WS	WS	
1962	W	W	W	W	W	
1963	W	W	W	O	W	
1964	W	W	W	W	O	Mean
	32.4	31.8	29.3 (±1.35)	29.6	36.7	32.0

Mean D.M.%: 79.6

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65/C/8.1

CHEMICAL CONTROL OF TAKE-ALL

(AP)

The chemical control of take-all (Ophiobolus graminis) in winter wheat - Highfield Drive 1965, the third year.

Area of each plot: 0.0072. Area harvested: 0.0071.

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

No heptachlor sprays were applied in 1965.

Basal applications: 2.5 cwt (0:20:20) combine drilled. 1 cwt N as 'Nitro-Chalk' applied as spring top dressing. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals).

Cultivations, etc.: Ploughed: Oct 16, 1964. Seed drilled at 160 lb: Oct 23. 'Nitro-Chalk' applied: Apr 14, 1965. Sprayed: Apr 30. Combine harvested: Aug 26. Variety: Cappelle.

NOTES: (1) Estimates were made of the incidence of take-all and eyespot (Cercosporella herpotrichoides) in March and June.
(2) For previous years' results see 'Results' 63/C/9 and 64/C/8.

Standard error per plot.
Grain: 4.48 or 11.7% (8 d.f.)

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65/C/8.2

SUMMARY OF RESULTS

GRAIN

0	H4 S1	H8 S1	H4 S2	H8 S2	Mean
37.4	37.8	38.1 (±2.58)	42.1	35.2	38.1

Mean D.M.%: 76.2

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65/C/9.1

CEREAL DISEASE REFERENCE PLOTS

(AQ)

Pennells Piece 1965, the third 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 12, 1964. All plots except winter wheat chisel ploughed: Dec 23.
Winter wheat: Seed combine drilled at 160 lb: Oct 23. 'Nitro-Chalk' applied: Mar 11, 1965. Sprayed with mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals): Apr 23. Combine harvested: Sept 10.
Spring wheat: Seed combine drilled at 190 lb: Apr 2, 1965. 'Nitro-Chalk' applied: Apr 5. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals): May 13. Combine harvested: Sept 10.
Oats: Seed combine drilled at 170 lb, 'Nitro-Chalk' applied: Mar 15, 1965. Sprayed with MCPA at 1.13 lb and dicamba at 0.08 lb in 40 gals: May 19. Combine harvested: Sept 10.
Spring beans: Seed placement drilled at 200 lb: Feb 18, 1965 (Rows spaced at 10.5 in). Sprayed with menazon (Saphicol at 0.5 pints in 40 gals): June 4. Combine harvested: Sept 29. Variety: Garton's Pedigree Tic.

NOTES: (1) Yields were taken for winter and spring wheat only.
(2) Estimates of the incidence of take-all (Ophiobolus graminis) and eyespot (Cercosporella herpotrichoides) were made on 8 occasions for winter and 4 for spring wheat.
(3) For previous years' results see 'Results' 63/C/10 and 64/C/9.

Standard errors per plot. Grain:
Winter wheat: 4.11 or 11.7% (4 d.f.)
Spring wheat: 0.95 or 3.0% (4 d.f.)

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65/C/9.2

SUMMARY OF RESULTS

GRAIN

Crop 1963 1964	W W	O W	Be O	Mean
WINTER WHEAT				
	34.8	31.8	38.9	35.1
	(±2.05)	(±2.90)		
SPRING WHEAT				
	31.2	29.6	34.9	31.7
	(±0.47)	(±0.67)		

Mean D.M.%: Winter wheat: 72.7
Spring wheat: 70.4

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65/C/10.1

N AND NPK RESIDUES

(AX)

An investigation of the relative importance of short term N and PK residues - Fosters West Side, the second year, barley 1965.

Design: 4 randomised blocks of 16 plots (with kale and wheat 1964 on sub- blocks of 8 plots) with interactions involving residual N confounded.

Area of each plot: 0.0193. Area harvested: 0.0128.

Treatments: All combinations of:-

In 1964

1. Spring wheat and kale.
2. N: None (R0), 0.5 (R1), 1.0 (R2), 1.5 (R3) cwt as 'Nitro-Chalk'.
3. PK: None (0), 2.0 cwt P_2O_5 and 2.0 cwt K_2O as compound (0:20:20) (C).

To barley 1965

4. N: None (N0), 0.33 (N1), 0.66 (N2), 1.00 (N3) cwt N as 'Nitro-chalk'.

Basal applications: Manures: None. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 34 gals).

Cultivations, etc.: Ploughed: Dec 9, 1964. 'Nitro-Chalk' applied, seed drilled at 156 lb: Mar 29, 1965. Sprayed: May 20. Combine harvested: Sept 1. Variety: Maris Badger.

Standard error per plot. Grain:
Sub plot: 1.67 or 4.9% (14 d.f.)

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65/C/10.2

SUMMARY OF RESULTS

	N0	N1	N2	N3	Mean
		AFTER WHEAT 1964			
Mean (±0.59)*	25.7	36.9	37.5	37.1	34.3
		(±1.18)*			(±0.59)*
R0	24.5	35.1	37.5	38.8	34.0
R1	22.9	36.0	37.1	38.0	33.5
R2	27.5	38.5	38.2	36.8	35.3
R3	28.0	37.8	37.2	34.9	34.5
		(±0.83)*			(±0.42)*
O	26.5	37.6	37.4	37.2	34.7
C	25.0	36.1	37.5	37.1	33.9
		AFTER KALE 1964			
Mean (±0.59)*	21.5	34.5	38.7	38.8	33.3
		(±1.18)*			(±0.59)*
R0	19.8	33.7	38.4	40.2	33.0
R1	19.2	34.8	39.0	36.9	32.5
R2	22.7	33.1	39.4	39.4	33.6
R3	24.4	36.3	37.9	38.6	34.3
		(±0.83)*			(±0.42)*
O	22.8	34.0	38.4	39.4	33.6
C	20.2	34.9	38.9	38.2	33.1

* For use in comparisons only within the same previous crop

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65/C/10.3

Mean over 'after Wheat' and 'after Kale' 1964

	N0	N1	N2	N3	Mean
Mean (±0.42)	23.6	35.7	38.1	38.0	33.8
		(±0.83)			(±0.42)
R0	22.2	34.4	38.0	39.5	33.5
R1	21.0	35.4	38.0	37.4	33.0
R2	25.1	35.8	38.8	38.1	34.4
R3	26.2	37.0	37.6	36.8	34.4
		(±0.59)			(±0.29)
O	24.6	35.8	37.9	38.3	34.2
C	22.6	35.5	38.2	37.6	33.5

Mean D.M. %: 78.3

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CHEMICAL CONTROL OF WIREWORMS

(BB)

New Zealand 1965, the second year - spring wheat.

Design: Main experiment: 4 randomised blocks of 11 plots.
Subsidiary experiment: 4 blocks of 4 plots each plot being 1/4 of one of the 1964 plots.

	Main	Subsidiary
Area of each whole plot:	0.0193	0.0048
Area harvested:	0.0129	0.0024.

Treatments:
Main experiment: Residual effects of sprays and seed dressings applied in 1964 (see 'Results' 64/C/12.1).
Subsidiary experiment: One plot per block which received no treatment in 1964, was divided into 4 for a comparison of insecticide treatments - None (O), 1.5 lb zinophos* (Cs), 1.5 lb 'Sumithion'* (Ds), 1.5 lb 'Stauffer N 2790' as 4% granules (HG).
* In 200 gals.

Basal applications: 2.5 cwt (20:10:10) combine drilled, seed dressed with organo-mercury fungicide only. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals).

Cultivations, etc.: Ploughed: Oct 26, 1964. Rotary cultivated: Mar 29, 1965. Insecticide sprays applied: Mar 30. Rotary cultivated second time: Mar 31. Seed drilled at 124 lb: Apr 2. Sprayed, weedkiller: May 19. Main experiment combine harvested: Sept 20. Subsidiary experiment hand harvested: Sept 21. Variety: Jufy I.

NOTES: (1) Soil samples were taken throughout the season from the sub-plots for determining the persistence of insecticides. Soil samples were taken and pitfall traps were used to discover the effects of insecticides on soil fauna.
(2) For the previous year's results see 'Results' 64/C/12.

Standard error per plot. Grain:
Main experiment: 2.00 or 6.7% (31 d.f.)
Subsidiary experiment: 2.08 or 7.0% (9 d.f.)

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65/C/11.2

SUMMARY OF RESULTS

GRAIN

	Mean		Increase
	MAIN EXPERIMENT		
			(±1.22)
0	29.0	(±0.71)	
As	30.0		+1.0
Bs	30.4		+1.4
Cs	28.8		-0.2
Ds	29.6		+0.6
Es	29.2	(±1.00)	+0.2
Ad	29.3		+0.3
Bd	29.9		+0.9
Fd	30.8		+1.8
Gd	30.7		+1.7
Mean	29.7		

Mean D.M. %: 78.4

SUBSIDIARY EXPERIMENT

0	27.8	
Cs	30.0	(±1.04)
Ds	30.1	
Hg	30.3	
Mean	29.5	

Mean D.M. %: 77.1

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65/C/12.1

LUCERNE

(AZ)

Row spacing, N and paraquat, Long Hoos VII, 1965.

For treatments, etc. and the previous year's results see 'Results' 64/C/13. 'Nitro-Chalk' is applied as a top-dressing at the same rates as in 1964 and on the same plots.

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

Cultivations, etc.: P1 treatment sprayed with paraquat at 2 lb ion in 44 gals: Feb 20, 1965. Basal PK compound and 'Nitro-Chalk' applied: Mar 12. Cut 3 times: June 2, July 19, Oct 4. PK applied after first 2 cuts.

Standard errors per plot. Dry matter:

1st cut:	3.08 or 7.3% (33 d.f.)
2nd cut:	1.46 or 4.5% (33 d.f.)
3rd cut:	1.68 or 7.0% (33 d.f.)
Total of 3 cuts:	3.81 or 3.9% (33 d.f.)

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65/C/12.2

SUMMARY OF RESULTS

DRY MATTER

	N0	N1	N2	Mean
		1ST CUT		
		(±1.09)		(±0.63)
C	42.8	45.6	43.6	44.0
W	40.1	42.8	39.3	40.7
Mean (±0.77)	41.4	44.2	41.4	42.3
		(±1.09)		(±0.63)
P0	43.7	45.1	43.9	44.2
P1	39.2	43.2	39.0	40.5

	C	W
	(±0.89)	
P0	45.6	42.8
P1	42.3	38.6

Mean D.M.%: 16.2

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65/C/12.3

DRY MATTER

	N0	N1	N2	Mean
		2ND CUT		
		(±0.52)		(±0.30)
C	32.6	33.2	32.7	32.8
W	31.1	32.1	32.1	31.8
Mean (±0.36)	31.8	32.6	32.4	32.3
		(±0.52)		(±0.30)
P0	31.9	32.8	32.2	32.3
P1	31.8	32.5	32.6	32.3

	C	W
	(±0.42)	
P0	33.1	31.4
P1	32.5	32.2

Mean D.M. %: 17.7

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65/C/12.4

DRY MATTER

	N0	N1	N2	Mean
		3RD CUT		
		(±0.59)		(±0.34)
C	24.2	24.6	24.1	24.3
W	23.8	23.8	23.6	23.7
Mean (±0.42)	24.0	24.2	23.9	24.0
		(±0.59)		(±0.34)
P0	24.4	24.6	22.9	24.0
P1	23.6	23.8	24.8	24.1

	C	W
	(±0.48)	
P0	24.6	23.3
P1	24.0	24.2

Mean D.M. %: 20.4

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65/C/12.5

DRY MATTER

	N0	N1	N2	Mean
		TOTAL OF 3 CUPS		
		(±1.35)		(±0.78)
C	99.5	103.3	100.4	101.1
W	95.0	98.7	95.0	96.3
Mean (±0.95)	97.3	101.0	97.7	98.7
		(±1.35)		(±0.78)
P0	99.9	102.5	99.0	100.5
P1	94.6	99.6	96.4	96.8

	C	W
	(±1.10)	
P0	103.4	97.6
P1	98.7	95.0

Mean D.M. %: 18.1

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65/C/13.1

PARAQUAT EXPERIMENT

(BA)

A comparison of methods of preparing a seedbed for barley following spring wheat and an investigation of the effect of paraquat on soil fauna - Pastures 1965, the second year.

For treatments, etc. and the previous year's results see 'Results' 64/C/14.

In 1965 treatments were repeated with one additional factor - the season of application of paraquat, in winter (A) on Nov 6, 1964, or in spring (B) on Mar 25, 1965. The paraquat was applied in each case at 2 lb ion in 40 gals.

Area of each sub-plot: 0.0145. Area harvested: 0.0068.

Basal applications: Fertiliser as 1964. Weedkiller: MCPA/TBA (18/15 at 4 pints in 40 gals).

Cultivations, etc.: A plots sprayed with paraquat: Nov 6, 1964. B plots sprayed with paraquat, all P plots ploughed: Mar 25, 1965. R plots rotary cultivated, all P plots ring rolled: Mar 29. All P plots disc harrowed: Mar 30. All R plots rotary cultivated, all P plots harrowed: Apr 1. Seed drilled by I.C.I. drill at 168 lb: Apr 2. All P plots harrowed and ring rolled: Apr 3. GA and GB plots flat rolled: Apr 5. Sprayed: May 22. Combine harvested: Sept 15. Variety: Maris Badger. Previous crops: 6 year grass and clover ley 1957/63, spring wheat 1964.

NOTE: The direct-seeded plots (GA and GB) had poor stands of barley, in many places completely choked by grass weeds.

Standard errors per plot.
Grain: Whole plot: 2.10 or 6.4% (14 d.f.)
Sub plot: 3.26 or 9.9% (48 d.f.)

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65/C/13.2

SUMMARY OF RESULTS

GRAIN

	P	PGA	PGB	RGA	RGB	GA	GB	Mean
	(±0.74)				(±1.05)			
Mean	37.4	36.6	37.2	34.8	33.9	22.6	23.6	32.9
	(±1.05)				(±1.48)			(±0.52)
0	38.0	36.9	35.8	35.0	33.4	22.4	25.6	33.1
I	36.7	36.2	38.6	34.7	34.4	22.8	21.5	32.7
	(1) and (2)			(3) and (4)				(±0.58)
N0	39.1	36.0	39.0	34.6	32.4	14.6	17.3	31.5
N1	37.4	36.4	36.1	36.8	33.0	22.1	22.0	32.6
N2	36.6	36.4	37.0	34.9	33.2	28.4	29.2	34.0
N3	36.4	37.5	36.8	33.0	36.8	25.2	25.8	33.5

	N0	N1	N2	N3
		(5) and (6)		
0	32.1	33.2	33.5	33.7
I	30.9	32.1	34.5	33.3

Mean D.M. %: 75.7

(1) (±1.25) (3) (±1.76) For use in horizontal and diagonal comparisons only.

(2) (±1.15) (4) (±1.63) For use in vertical and interaction comparisons only.

(5) (±0.88) For use in vertical and diagonal comparisons only.

(6) (±0.82) For use in horizontal and interaction comparisons only.

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65/C/14.1

IRRIGATION

(IR)

The effect of irrigation on potatoes and spring beans - Great Field I and II 1965.

Design:

Potatoes: A single replicate of 4 x 2 x 3 x 2 x 2 in two blocks. Each block is divided into 4 whole plots for the irrigation treatments, and at right angles into 6 strips for varieties and spacing. There is a further split for chitting and N.

Spring beans: 4 x 2 x 2 x 2 x 2 in two blocks. Each block is divided into 4 whole plots for irrigation, these being divided into 8 sub-plots.

Area of each sub-plot:-

Potatoes: 0.0204. Area harvested: 0.0080.

Spring beans: 0.0321. Area harvested: 0.0210.

Treatments: potatoes: All combinations:-

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

To strips of 1/6th plots.

2. Varieties: Majestic (M), King Edward (E).
3. Spacing: Seed 12 (S1), 15 (S2), 18 inches (S3) apart in row.

1/12th plots.

4. Chitting: None (O), seed chitted (Ch).
5. Nitrogen: 0.75 (N1), 1.5 (N2) cwt N as 'Nitro-Chalk'.

Spring beans: All combinations of:-

Main plots.

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

Sub-plots.

2. Row spacing: 10.5 (C), 21 inches (W).
3. Seed rate: 200 (L), 300 lb (H).
4. Rates of PK: 400 (F1), 560 lb (F2) (0:20:20).
5. Methods of applying fertiliser: Broadcast (B), placed (P).

Basal applications:

Potatoes: 2.0 cwt P205, 4.0 cwt K20 as (0:14:28) rotary cultivated in. Weedkiller: Paraquat at 0.75 lb ion plus linuron at 2 lb in 40 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 3 occasions.

Spring beans: Manures: None. Weedkiller: Simazine at 1 lb in 40 gals. Insecticide: Menazon at 4 oz in 40 gals.

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Cultivations, etc.:
Potatoes: Ploughed: Dec 21 - Feb 17, 1964. Basal PK compound applied: Apr 8, 1965. 'Nitro-Chalk' applied: Apr 12. Rotary cultivated, potatoes planted: Apr 15. Sprayed, weedkiller: May 13, fungicide: June 30, July 27, Aug 10. Sprayed with undiluted BOV at 15 gals: Aug 27. Lifted: Oct 21. Previous crops: Barley 1963 and 1964.
Spring beans: Ploughed: Feb 17, 1965. Seed placement drilled for C treatment: Mar 16. Fertiliser broadcast for C treatment: Mar 17. Seed placement drilled and fertiliser broadcast for W treatment: Mar 25. Sprayed, weedkiller: Mar 29, insecticide: June 11. Combine harvested: Oct 6. Variety: Garton's Pedigree Tick. Previous crops: Barley 1963 and 1964.

RAINFALL AND IRRIGATION: INCHES

Week-ending	Rain	Potatoes A and C	Beans A and C
6 May	0.78		
13	0.10		
20	0.52		
27	0.48		
3 June	0.14		0.50
10	0.68		
17	0.94		
24	0.69		
1 July	0.07		
8	0.33	1.00	
15	1.33		
22	0.84		
29	1.58		
5 Aug	0.70		
12	0.03		
19	0.37		
26	0.76		
2 Sept	0.25		
Total	10.59	1.00	0.50

Standard errors per plot.

Potatoes, total tubers:	Pooled whole & strip:	1.017 or 6.4% (9 d.f.)
	1/6 plot:	0.639 or 4.0% (21 d.f.)
	1/12 plot:	1.386 or 8.7% (28 d.f.)
Spring beans, grain:	Whole plot:	0.70 or 2.5% (5 d.f.)
	Sub plot:	2.12 or 7.6% (23 d.f.)

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65/C/14.3

SUMMARY OF RESULTS

POTATOES

TOTAL TUBERS

	O & B		A & C	Mean
		(±0.415)		
Mean	16.39		15.55	15.97
		(1) and (2)		(±0.415)
M	16.26		15.88	16.07
E	16.53		15.22	15.87
		(3) and (4)		(±0.519)
S1	16.68		16.42	16.55
S2	16.32		14.93	15.62
S3	16.18		15.31	15.74
		(5) and (6)		(±0.200)
O	16.10		14.49	15.29
CH	16.69		16.61	16.65
		(5) and (6)		(±0.200)
N1	16.60		15.50	16.05
N2	16.19		15.61	15.90

(1) (±0.184) (3) (±0.226) For use in interaction comparisons only
(2) (±0.435) (4) (±0.533) For use in all other comparisons
(5) (±0.461) For use in horizontal and diagonal comparisons
(6) (±0.283) For use in vertical and interaction comparisons

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65/c/14.4

POTATOES

TOTAL TUBERS

	MS1	MS2	MS3	ES1	ES2	ES3
O & B	16.18	16.76	15.84	17.19	15.87	16.52
A & C	16.60	15.63	15.42	16.25	14.22	15.19

	MO	MCH	EO	ECH
O & B	16.06	16.46	16.14	16.91
A & C	14.64	17.12	14.34	16.10

	MN1	MN2	EN1	EN2
O & B	16.43	16.08	16.76	16.29
A & C	15.69	16.07	15.30	15.14

	S1O	S1CH	S2O	S2CH	S3O	S3CH
O & B	16.53	16.84	16.05	16.59	15.72	16.64
A & C	15.50	17.35	14.22	15.64	13.76	16.86

	S1N1	S1N2	S2N1	S2N2	S3N1	S3N2
O & B	16.53	16.84	17.12	15.52	16.16	16.20
A & C	16.24	16.61	15.38	14.47	14.87	15.74

	ON1	ON2	CHN1	CHN2
O & B	16.43	15.77	16.77	16.60
A & C	14.51	14.47	16.48	16.74

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65/C/14.5

POTATOES

% WARE

	O & B	A & C	Mean
Mean	97.0	96.4	96.7
M	97.4	97.0	97.2
E	96.7	95.8	96.2
S1	96.8	96.1	96.5
S2	96.8	96.3	96.5
S3	97.5	96.8	97.1
O	96.7	95.6	96.2
CH	97.4	97.1	97.3
N1	97.1	96.3	96.7
N2	97.0	96.4	96.7

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65/C/14.6

POTATOES

% WARE

	MS1	MS2	MS3	ES1	ES2	ES3
O & B	96.9	97.3	97.9	96.7	96.3	97.2
A & C	96.9	96.7	97.4	95.3	95.8	96.1

	MO	MCH	EO	ECH
O & B	97.4	97.4	96.0	97.4
A & C	96.9	97.1	94.4	97.1

	MN1	MN2	EN1	EN2
O & B	97.4	97.4	96.7	96.7
A & C	97.0	97.0	95.6	95.9

	S1O	S1CH	S2O	S2CH	S3O	S3CH
O & B	96.7	96.9	96.2	97.4	97.2	97.8
A & C	95.3	97.0	95.7	96.8	95.9	97.6

	S1N1	S1N2	S2N1	S2N2	S3N1	S3N2
O & B	96.7	96.9	96.8	96.8	97.6	97.4
A & C	95.9	96.3	96.3	96.3	96.9	96.7

	ON1	ON2	CHN1	CHN2
O & B	96.8	96.6	97.3	97.5
A & C	95.5	95.7	97.1	97.1

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65/C/14.7

SPRING BEANS

GRAIN

	O & B	A & C	Mean
	(±0.35)		
Mean	28.8	27.4	28.1
	(1) and (2)		(±0.37)
C	29.8	28.2	29.0
W	27.8	26.6	27.2
	(1) and (2)		(±0.37)
L	29.4	28.0	28.7
H	28.2	26.8	27.5
	(1) and (2)		(±0.37)
F1	28.9	26.7	27.8
F2	28.6	28.0	28.4
	(1) and (2)		(±0.37)
B	29.8	28.2	28.9
P	27.8	26.6	27.2

(1) (±0.51) For use in horizontal and diagonal comparisons
(2) (±0.53) For use in vertical and diagonal comparisons

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65/C/14.8

SPRING BEANS

GRAIN

	CL	WL	CH	WH
		(3) and (4)		
O & B	30.3	28.4	29.4	27.0
A & C	28.8	27.2	27.6	25.9
	CF1	WF1	CF2	WF2
		(3) and (4)		
O & B	29.6	28.1	30.0	27.4
A & C	26.8	26.6	29.6	26.6
	CB	WB	CP	WP
		(3) and (4)		
O & B	30.4	29.1	29.2	26.4
A & C	28.6	27.6	27.8	25.5
	LF1	HF1	LF2	HF2
		(3) and (4)		
O & B	29.8	28.0	28.8	28.4
A & C	27.2	26.2	28.8	27.4
	LB	HB	LP	HP
		(3) and (4)		
O & B	30.8	28.8	27.9	27.7
A & C	28.6	27.7	27.4	25.8

(3) (±0.72) For use in vertical and diagonal comparisons
(4) (±0.75) For use in horizontal and interaction comparisons

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65/C/14.9

SPRING BEANS

GRAIN

	F1B	F2B	F1P	F2P
		(3) and (4)		
O & B	30.0	29.5	27.8	27.8
A & C	27.8	28.5	25.6	27.6

(3) (±0.72) For use in vertical and diagonal comparisons
(4) (±0.75) For use in horizontal and interaction comparisons

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65/C/15.1

ONE YEAR LEYS FOR WHEAT

(WAS)

A comparison of different one year leys as a preparation for wheat - Woburn Warren Field North - winter wheat 1965 the second year.

Design: A single replicate of 6 x 3 x 3 x 3 in 3 randomised blocks of 18 plots, whole plots split for N.

Area of each sub plot: 0.0071. Area harvested: 0.0060.

Treatments: All combinations of:-

Whole plots:

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.
2. Potash (1964): None (KR0), 1.2 (KR1), 2.4 (KR2) cwt K20 as muriate of potash.
3. Potash to wheat 1965: None (K0), 1.2 (K1), 2.4 (K2) cwt K20 half applied to ley stubble as muriate of potash, half combine drilled with 0.6 cwt P205 as granular superphosphate (K0), as (0:20:20) (K1), as (0:14:28) (K2).

Sub plots:

4. Nitrogen to wheat 1965: None (N0), 0.5 (N1), 1.0 (N2) cwt N as 'Nitro-Chalk'.

Basal applications:

Leys 1964: 1.25 cwt superphosphate combine drilled 1963.
Wheat 1965: Manures: None. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals).

Cultivations, etc.: 1st dressing of K applied: Aug 6, 1964. Ploughed: Oct 9 - 26. Rotary cultivated, seed drilled at 206 lb: Nov 24. N applied - 1st half dressing: Apr 6, 1965, 2nd half dressing: May 13. Sprayed: May 10. Combine harvested: Sept 12. Variety: Cappelle. Previous crops: Barley 1962 and 1963.

NOTES: (1) Plots were sampled at ear emergence for yield and N and K percentage, and at harvest for N and K percentage of grain and straw.
(2) For the previous year's results see 'Results' 64/C/16.

Standard errors per plot. Grain:
Whole plot: 2.10 or 6.7% (18 d.f.)
Sub plot: 3.02 or 9.6% (40 d.f.)

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65/C/15.2

SUMMARY OF RESULTS

GRAIN

	C0	R0	R2	R4	M0	M2	Mean
			(±1.21)				(±0.50)
K0	33.4	28.9	27.3	30.6	33.0	28.9	30.4
K1	36.9	30.5	28.0	31.8	33.9	31.3	32.1
K2	37.7	30.6	28.8	33.2	32.1	29.2	31.9
			(±1.21)				
KR0	36.4	29.7	27.5	32.3	31.7	30.5	31.3
KR1	36.5	29.6	28.4	30.9	34.4	30.0	31.6
KR2	35.1	30.8	28.3	32.4	33.0	28.9	31.4
			(1) and (2)				(±0.41)
N0	31.6	21.5	20.1	28.2	27.2	21.8	25.1
N1	38.2	32.1	29.2	32.7	34.5	31.5	33.0
N2	38.3	36.4	34.9	34.6	37.3	36.2	36.3
Mean (±0.70)	36.0	30.0	28.1	31.9	33.0	29.8	31.5

Mean D.M. %: 75.1

(1) (±1.08) For use in horizontal and diagonal comparison
(2) (±1.01) For use in vertical and interaction comparison

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65/C/15.3

STRAW

	C0	R0	R2	R4	M0	M2	Mean
K0	32.7	23.2	19.6	21.4	26.2	24.7	24.6
K1	33.6	22.5	21.9	24.0	29.0	22.5	25.6
K2	33.1	23.9	21.8	25.1	28.2	23.7	26.0
KR0	32.2	24.2	19.9	22.3	25.6	23.5	24.6
KR1	32.9	22.6	21.2	23.0	28.7	23.7	25.3
KR2	34.3	22.7	22.2	25.3	29.2	23.6	26.2
N0	27.8	16.3	14.5	19.0	22.4	15.5	19.2
N1	35.0	25.1	21.8	23.4	28.9	26.3	26.7
N2	36.7	28.1	27.0	28.1	32.2	29.1	30.2
Mean	33.1	23.2	21.1	23.5	27.8	23.6	25.4

Mean D.M.%: 74.5

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65/C/16.1

GREEN MANURES FOR SUGAR BEET

(WBE)

Effects of trefoil and ryegrass green manures and N - Woburn Great Hill Bottom I 1965, sugar beet after barley.

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

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

Treatments: All combinations of:-

1. Green manures undersown in barley 1964: None (O), trefoil (T), ryegrass (R), ryegrass with 0.6 cwt N as 'Nitro-Chalk' applied after barley harvest (RN).
2. Time of ploughing: Autumn (A), spring (S).
3. Nitrogen: None (N0), 0.6 (N1), 1.2 (N2), 1.8 (N3) N as 'Nitro-Chalk'.

Basal applications:

To barley: 3 cwt (17:11:22) combine drilled. Weedkiller: MCPB/MCPA (New Legumex at 5 pints in 40 gals).

To green manures: None.

To sugar beet: 5 cwt agricultural salt, 0.45 cwt K20 as muriate of potash in winter, 0.45 cwt P205 and 0.45 cwt K20 as (0:20:20) in seedbed.

Cultivations, etc.: Ploughed: Oct 22, 1963. Rotary cultivated twice: Mar 9 and Apr 1, 1964. Barley drilled at 140 lb: Apr 7. Trefoil undersown at 30 lb and ryegrass at 40 lb: Apr 9. Sprayed: May 15. Combine harvested: Aug 27. 'Nitro-Chalk' applied to RN plots: Sept 11. A plots ploughed: Nov 13. S plots ploughed: Feb 5, 1965. Salt and muriate of potash applied: Feb 9. Rotary cultivated: Apr 1. Rotary cultivated, basal PK compound applied: Apr 14. 'Nitro-Chalk' applied, seed drilled at 5 lb: Apr 15. Singled: May 25. Lifted: Nov 11. Varieties: Barley - Proctor, ryegrass - English Leafy Italian, trefoil - English (inoculated), sugar beet - Klein E. Previous crops: Potatoes 1961, spring wheat 1962.

NOTES: (1) Green manures were sampled for weight of dry matter and percentage N just before ploughing.

(2) There was severe frost during lifting and roots on some plots were damaged. Sugar % was estimated for two plots.

Standard errors per plot.

Roots:	1.318 or 6.3% (29 d.f.)
Total sugar:	4.94 or 6.9% (27 d.f.)
Tops:	1.200 or 7.0% (29 d.f.)

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65/C/16.2

SUMMARY OF RESULTS

	N0	N1	N2	N3	Mean
		ROOTS			
		(±0.329)			
Mean	17.45	21.49	21.95	22.59	20.87
		(±0.659)			(±0.329)
O	16.95	20.76	21.12	23.00	20.46
T	17.21	21.33	22.48	23.24	21.06
R	16.21	21.27	22.50	22.28	20.56
RN	19.42	22.59	21.70	21.86	21.39
		(±0.466)			(±0.233)
A	17.74	21.77	22.85	22.41	21.19
S	17.15	21.20	21.05	22.77	20.54

	O	T	R	RN
		(±0.466)		
A	20.76	21.34	20.78	21.88
S	20.15	20.79	20.35	20.89

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65/C/16.3

	N0	N1	N2	N3	Mean
		SUGAR %			
Mean	17.5	17.4	17.1	16.9	17.3
O	17.3	17.5	16.9	15.9	16.9
T	18.0	17.3	17.1	17.7	17.5
R	16.8	17.8	17.5	17.0	17.3
RN	18.1	17.2	17.0	16.8	17.3
A	17.5	17.3	17.0	16.9	17.2
S	17.6	17.6	17.2	16.8	17.3

	O	T	R	RN
A	16.7	17.4	17.1	17.5
S	17.1	17.6	17.4	17.0

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65/C/16.4

	NO	N1	N2	N3	Mean
		TOTAL SUGAR			
		(±1.23)			
Mean	61.0	75.0	75.1	75.9	71.7
		(±2.47)			(±1.23)
O	58.6	72.7	71.4	73.2	69.0
T	62.2	73.7	76.8	82.0	73.7
R	53.3	75.6	78.7	74.7	70.6
RN	69.9	78.0	73.4	73.7	73.7
		(±1.75)			(±0.87)
A	62.0	75.5	77.8	75.3	72.7
S	59.9	74.5	72.4	76.5	70.8

	O	T	R	RN
		(±1.75)		
A	69.4	74.2	70.6	76.4
S	68.5	73.2	70.6	71.0

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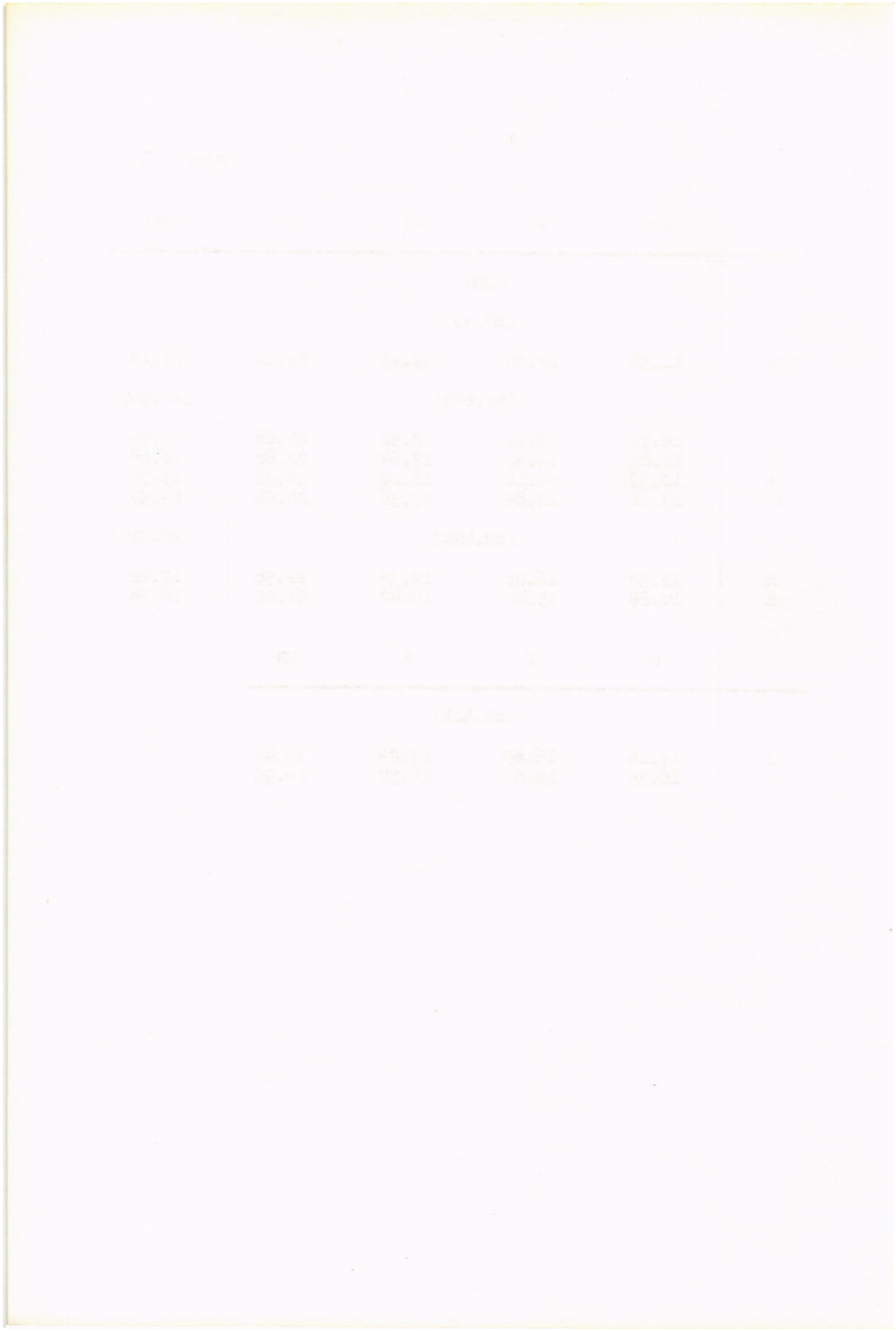
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65/C/16.5

	N0	N1	N2	N3	Mean
		TOPS			
		(±0.300)			
Mean	11.58	15.63	19.41	22.12	17.18
		(±0.600)			(±0.300)
O	10.71	16.12	18.52	21.68	16.76
T	11.81	14.40	17.64	22.88	16.68
R	10.38	14.14	18.12	20.98	15.91
RN	13.41	17.85	23.36	22.94	19.39
		(±0.424)			(±0.212)
A	12.30	16.26	19.35	22.58	17.62
S	10.85	15.00	19.47	21.66	16.74

	O	T	R	RN
		(±0.424)		
A	17.16	16.69	17.23	19.41
S	16.35	16.67	14.58	19.36

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65/C/17.1

ROW SPACING AND FERTILISERS

(WBD/B)

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

Design: A half replicate of 4 x 4 x 2 x 2 x 2, in 4 blocks of 16 plots each, with a component of (C v D) x (A v B) x N (1964) x N (1965) as identity. Certain 3 factor and higher order interactions are confounded.

Area of each plot: 0.0030.

Treatments: All combinations of:-

To potatoes 1964:
1. Levels of NPK (in the proportions 1.0 N, 1.0 P_2O_5, 1.5 K_2O) to supply: None (R0), 0.66 (R1), 1.32 (R2), 2.0 (R3) 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 x 14 in. (S14), 14 x 28 in. (S28).

To barley 1965:
5. Concentrated NPK fertiliser (16:16:27) to supply none (F0), 0.33 (F1), 0.66 (F2), 1.00 (F3) cwt N.

Basal applications: Manure - none. Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals).

Cultivations, etc.: Ground chalk applied at 38 cwt: Oct 1 - 12, 1964. Chisel ploughed: Nov 2. Seed drilled at 112 lb: Mar 15, 1965. Fertilisers broadcast: Mar 17. Sprayed: May 10. Combine harvested: Sept 21. Variety: Maris Badger. Previous crops: Winter wheat 1963, potatoes 1964.

NOTE: For details of the previous year's results see 'Results' 64/C/19.

Standard error per plot.
Grain: 6.61 or 14.3% (8 d.f.)

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65/C/17.2

SUMMARY OF RESULTS

GRAIN

1965

	F0	F1	F2	F3	Mean
Mean (±1.65)	48.2	46.6	46.1	44.1	46.3
1964		(±3.31)			(±1.65)
R0	48.2	49.0	47.4	44.6	47.3
R1	50.2	44.9	46.8	45.0	46.7
R2	47.5	45.8	46.8	45.1	46.3
R3	47.0	46.6	43.2	41.9	44.7
1964		(±2.34)			(±1.17)
S14	48.6	45.8	47.3	43.9	46.4
S28	47.9	47.4	44.8	44.3	46.1
		OMITTING R0			
1964		(±2.70)			(±1.35)
C	46.9	47.2	45.9	46.3	46.6
D	49.6	44.4	45.3	41.7	45.2
1964		(±2.70)			(±1.35)
B	48.6	45.4	43.5	44.2	45.4
A	47.8	46.2	47.7	43.8	46.4

Mean D.M. %: 75.4

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65/C/18.1

ROW SPACING AND FERTILISERS

(WBU)

Row spacing and concentrated fertilisers - Woburn Workhouse 1965, the first year. Potatoes 1965 followed by barley 1966.

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

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

Treatments: All combinations of:-

1. Levels of NPK (in the proportion 1.0 N, 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 1966, concentrated NPK fertiliser to supply none, 0.33, 0.66, 1.00 cwt N.

Basal applications: Weedkiller: diquat/paraquat (Preeglone Extra at 2 pints in 40 gals). Fungicide/insecticide: 8 lb Bordeaux mixture plus malathion/DDT (Kil at 10 fluid oz) in 40 gals, on 2 occasions. Fungicide: Bordeaux mixture at 8 lb in 40 gals on 2 occasions.

Cultivations, etc.: Ploughed: Jan 19 - 26, 1965. B fertilisers applied: Apr 13. Rotary cultivated, A fertilisers applied: Apr 21. Potatoes hand planted on the flat: Apr 21. Sprayed (weedkiller): May 7, fungicide/insecticide: July 5, July 16, fungicide: July 28, Aug 5. Sprayed with diquat (Reglone at 4 pints in 40 gals): Aug 11. Lifted: Sept 20. Variety: King Edward. Previous crops: Permanent Grass until 1964.

NOTE: The crop was severely infected with blight.

Standard error per plot.
Total tubers: 1.717 or 13.8% (30 d.f.)

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65/C/18.2

SUMMARY OF RESULTS

ROW SPACING

TOTAL TUBERS

	F0	F1	F2	F3	Mean
			(±0.429)		
Mean	13.39	12.46	11.69	12.16	12.43
			(±0.607)		(±0.350)
C		12.63	12.77	12.54	12.65
D		12.30	10.60	11.78	11.56
			(±0.607)		(±0.350)
B		12.46	11.87	11.72	12.02
A		12.46	11.51	12.60	12.19
			(±0.607)		(±0.303)
S14	14.14	13.39	13.21	12.94	13.42
S28	12.65	11.53	10.17	11.39	11.43

OMITTING F0

CB	DB	CA	DA
		(±0.496)	
12.56	11.48	12.73	11.65

C S14	D S14	C S28	D S28
		(±0.496)	
14.01	12.35	11.29	10.77

B S14	A S14	B S28	A S28
		(±0.496)	
12.96	13.41	11.08	10.98

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65/C/18.3

ROW SPACING

% WARE

	F0	F1	F2	F3	Mean
Mean	75.8	77.8	78.0	75.6	76.8
C		76.4	77.0	76.1	76.5
D		79.1	78.9	75.0	77.7
B		74.9	81.4	75.6	77.3
A		80.6	74.5	75.6	76.9
S14	74.2	72.2	73.9	70.9	72.8
S28	77.4	83.3	82.0	80.3	80.7

OMITTING F0

CB	DB	CA	DA
77.9	76.6	75.2	78.7

C S14	D S14	C S28	D S28
71.4	73.3	81.7	82.0

B S14	A S14	B S28	A S28
73.5	71.1	81.0	82.7

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65/C/19.1

SOIL STRUCTURE 2

Effects of peat (annual applications) and subsoiling (1963 only)
Woburn Stackyard Field, plot 6 of the Continuous Barley site,
red beet 1963, carrots 1964, red beet 1965.

Design: 4 randomised blocks of 5 plots each. Two blocks subsoiled.

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

Treatments: All combinations of:-
Blocks 1. Subsoiling: None (O) subsoiled (S) by hand to depth of 20 inches in 1963.
Whole plots 2. Peat: None, 62.5 cwt peat dry matter applied to top 2 inches of soil in 1965 only (Sb 65), 1963 - 65 cumulative dressings, 62.5 cwt peat dry matter applied annually to top 2 inches soil alone (Sb), or with peat dug in annually to a depth of 8 inches either at the same rate (Dg 1) or at twice the rate (Dg 2).

Basal dressings: Monoammonium phosphate, potassium nitrate, ammonium nitrate and magnesium sulphate to supply 200 lb N, 75 lb P, 250 lb K, 50 lb Mg: 3/4 of the fertilisers being dug in, 1/4 worked into the seedbed.

Cultivations, etc.:
Fertilisers for digging in applied: Mar 10. Peat for digging in applied and plots dug: Mar 31 - Apr 1. Seedbed peat applied: Apr 21. Seedbed fertilisers applied and seedbed prepared: May 5. Seed, rubbed and graded, drilled at 30 lb: May 6. Singled first to 2'' spacing: May 27 and 31, then to 4'' spacing: June 28. Sprayed with a mixture of menazon, DDT and gamma BHC at 1.5 fluid oz in 40 gals: May 21 and June 21. Lifted: Aug 12. Variety: Detroit Globe.

NOTE: Crop samples taken for estimation of dry matter and PK analysis.
Soil samples taken for determinations of pH and readily soluble PK.

Standard errors per plot.
Roots: 0.723 or 4.5% (12 d.f.)
Tops: 0.615 or 5.6% (12 d.f.)
Roots and Tops: 1.215 or 4.5% (12 d.f.)

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65/C/19.2

SUMMARY OF RESULTS

RED BEET

1965

	O	Sb65	Sb	Dg1	Dg2	Mean
1963			ROOTS			
			(±0.511)*			
O	14.58	15.78	16.20	16.31	16.10	15.80
S	15.88	16.42	15.70	16.74	16.86	16.52
Mean	15.24	16.10	16.45	16.53	16.48	16.16
			TOPS			
			(±0.435)*			
O	10.34	10.52	10.88	11.46	10.20	10.68
S	11.20	11.54	11.28	10.94	11.42	11.28
Mean	10.77	11.03	11.08	11.20	10.81	10.98
			ROOTS AND TOPS			
			(±0.859)*			
O	24.93	26.29	27.09	27.78	26.29	26.48
S	27.08	27.97	27.97	27.68	28.28	27.79
Mean	26.00	27.13	27.53	27.73	27.28	27.13

* For use in horizontal and interaction comparisons only.

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65/C/20.1

SOIL STRUCTURE 4

Effects of Krilium and peat, Woburn Stackyard Field, plot 6 of Continuous Barley site, red beet 1964, lettuce followed by red beet 1965.

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 treatments were applied to the same plots as in 1964. After hand digging the 1964 applications were buried and the 1965 treatments were applied to the seedbed and worked into the top 2 inches.

Basal dressings: Monoammonium phosphate, potassium nitrate, ammonium nitrate and magnesium sulphate to supply

1. Lettuce: 100 lb N, 75 lb P, 200 lb K, 50 lb Mg 3/4 dug in 1/4 to seedbed.
2. Red beet: 200 lb N, 75 lb P, 200 lb K, 50 lb Mg all to seedbed except half the N applied as top dressing.

Cultivations, etc.:

Lettuce. Fertilisers for digging in applied: Mar 10, 1965. All plots hand dug: Apr 1. Peat and Krilium applied and worked into the seedbed: Apr 22. Fertilisers to seedbed applied and seedbed prepared: May 5. Lettuce seed drilled at 3 lb: May 6. Singled first to 4 inch spacing: May 21, then to 8 inch spacing: June 14. Sprayed with a mixture of menazon, DDT and gamma BHC at 1.5 pints in 40 gals and cottoned against birds: May 21. Harvested: July 8. Variety: Borough Wonder.

Red beet. Seedbed fertilisers applied, prepared seedbed and seed drilled at 30 lb: July 9, 1965. Top dressing N applied: July 20. Singled, first to 2 inch spacing: July 28, then to 4 inch spacing: Aug 13. Sprayed with a mixture of menazon, DDT and gamma BHC at 1.5 pints in 40 gals: Aug 2. Lifted: Oct 19. Variety: Detroit Globe.

NOTE: Crop samples of both lettuce and red beet taken for determination of dry matter and samples retained for chemical analysis.

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ERRATUM to 'Results' 64/C/21.1:- Under 'Cultivations etc.' the rate of menazon, DDT and gamma BHC should be 1.5 pints in 40 gals.

Standard errors per plot.

Lettuce,	Total weight:	1.453 or 12.6% (6 d.f.)
Red Beet,	Roots:	0.358 or 3.0% (6 d.f.)
	Tops:	0.357 or 3.3% (6 d.f.)
	Roots + tops:	0.599 or 2.6% (6 d.f.)

SUMMARY OF RESULTS

	O	Pt	Mean
	LETTUCE		
	TOTAL WEIGHT		
	(±0.839)		(±0.593)
O	12.24	12.94	12.59
Kr	10.07	10.96	10.51
Mean (±0.593)	11.15	11.95	11.55

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65/c/20.3

RED BEET

	O	Pt	Mean
	ROOTS		
	(±0.207)		(±0.146)
O	11.55	11.49	11.52
Kr	12.30	11.71	12.01
Mean (±0.146)	11.92	11.60	11.76
	TOPS		
	(±0.206)		(±0.146)
O	11.58	10.64	11.11
Kr	10.99	10.42	10.71
Mean (±0.146)	11.29	10.53	10.91
	ROOTS + TOPS		
	(±0.346)		(±0.245)
O	23.13	22.14	22.63
Kr	23.30	22.14	22.72
Mean (±0.245)	23.21	22.14	22.67

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65/C/21.1

GRASS

The effects of oxamide on the growth and N uptake of sown ryegrass, Highfield O and E I, 1965.

Design: 4 randomised blocks of 10 plots.

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

Treatments: None (O) (2 plots per block) and all combinations of:-

1. N fertiliser:
   - Oxamide powder (OP)
   - Oxamide, small granules (2-4 mm) (OS)
   - Oxamide, large granules (7-9 mm) (OL)
   - Ammonium nitrate (A)
2. Levels of N: 100 lb (N1), 200 lb (N2) N.

Basal applications: 4 cwt (0:14:28). Weedkiller: Mecoprop at 3 lb in 50 gals.

Cultivations, etc.: Ploughed: Oct 8, 1964. Basal PK and treatment fertilisers applied, seed drilled at 30 lb: Apr 7, 1965. Sprayed: May 31. Cut 3 times: June 25, Aug 6, Oct 7. Variety: S22.

NOTE: % N in grass was determined.

Standard errors per plot. Dry matter:

1st cut:	2.43 or 8.8% (27 d.f.)
2nd cut:	2.75 or 8.2% (27 d.f.)
3rd cut:	1.78 or 12.1% (27 d.f.)
Total of 3 cuts:	4.61 or 6.1% (27 d.f.)

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SUMMARY OF RESULTS

DRY MATTER

	O	OP	OS	OL	A	Mean
1ST CUT						
			(±1.22)			(±0.61)
N1		30.2	28.4	22.1	31.9	28.2
N2		35.3	32.2	29.3	35.1	33.0
Mean (±0.86)	15.8	32.8	30.3	25.7	33.5	27.6*
2ND CUT						
			(±1.37)			(±0.69)
N1		31.1	33.9	32.5	31.3	32.2
N2		36.2	35.9	38.1	36.1	36.6
Mean (±0.97)	28.8	33.7	34.9	35.3	33.7	33.3*

* General mean

Mean D.M. %: 1st cut: 14.0
2nd cut: 14.7

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65/C/21.3

DRY MATTER

	O	OP	OS	OL	A	Mean
			3RD CUT			
			(±0.89)			(±0.44)
N1		12.0	13.9	14.8	13.5	13.6
N2		15.8	20.5	21.3	16.9	18.6
Mean (±0.63)	8.8	13.9	17.2	18.0	15.2	14.6*
			TOTAL OF 3 CUTS			
			(±2.31)			(±1.15)
N1		73.3	76.2	69.4	76.8	73.9
N2		87.3	88.6	88.7	88.1	88.2
Mean (±1.63)	53.4	80.3	82.4	79.1	82.4	75.5*

* General mean

Mean D.M. %: 3rd cut: 20.2
Total of 3 cuts: 16.3

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65/C/22.1

PARK GRASS MICROPLOTS

(PGM 81 - 160)

Effect of NPK on old grass, plots 5/1 (unmanured 1898 - 1964, unlimed) and 5/2 (PK 1898 - 1964, unlimed), 1965.

Design: Each of plots 5/1 and 5/2 - single replicate of 2 x 4 x 4 in 2 blocks of 8 plots each, with 4 additional plots per block.

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

Treatments:-

2 x 4 x 4: All combinations of:-

1. N*: 200 (N1), 400 lb (N2) as 'Nitro-Chalk', in 6 equal dressings, one for each cut.
2. P: None (P0), 15 (P1), 30 (P2), 60 lb (P4) as superphosphate.
3. K: None (K0), 100 (K2), 200 (K4), 400 lb (K8) as potassium chloride.

Additional plots (per block): All combinations of:

1. N*: 200 (N1), 400 lb (N2) as 'Nitro-Chalk'.
2. K: 50 (K1), 300 lb (K6) as potassium chloride, all receiving P2.

*In 1965, 3 cuts were taken on plot 5/1 and 4 on plot 5/2, the first cut being taken on plots 5/2 on May 18. Following this cut 'Nitro-Chalk' was applied on both plots, so that in all 4 dressings of N were applied on each plot. The actual rates of N applied were 133 (N1) and 267 lb (N2).

Basal applications: Ground chalk, 92 cwt to plot 5/2, 102 cwt to plot 5/1.

Cultivations, etc.: Ground chalk applied: Feb 2, 1965. PK dressings applied: Feb 22. 'Nitro-Chalk' applied: Mar 9. Cut: May 18 (5/2 only), June 23, Aug 9, Oct 27. 'Nitro-Chalk' applied to all plots after every cut except the last.

Standard errors per plot, dry matter.

Plot 5/1. 1st cut: 3.48 or 13.5% (11 d.f.)
2nd cut: 1.64 or 13.0% (11 d.f.)
3rd cut: 2.45 or 13.3% (11 d.f.)
Total of 3 cuts: 6.10 or 10.7% (11 d.f.)

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65/C/22.2

Standard errors per plot, dry matter.

Plot 5/2.	1st cut:	1.94 or 12.7%	(11 d.f.)
	2nd cut:	2.20 or 11.2%	(11 d.f.)
	3rd cut:	1.41 or 6.0%	(11 d.f.)
	4th cut:	1.12 or 5.5%	(11 d.f.)
Total of 4 cuts:		4.68 or 5.9%	(11 d.f.)

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65/C/22.3

SUMMARY OF RESULTS

PLOT 5/1: DRY MATTER

1ST CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±1.23)	15.9	24.6	27.7	31.7	25.0
			(±2.46)		(±1.23)
K0	16.9	24.8	26.7	30.6	24.8
K2	16.2	25.3	31.3	31.3	26.0
K4	16.9	26.4	28.6	32.8	26.2
K8	13.9	22.0	24.3	32.0	23.0
			(±1.74)		(±0.87)
N1	15.5	21.7	23.3	27.2	21.9
N2	16.4	27.6	32.2	36.2	28.1

	K0	K2	K4	K8
			(±1.74)	
N1	21.2	23.5	22.5	20.5
N2	28.3	28.5	29.9	25.6

K1 and K6 plots

	K1	K6	Mean
		(±2.46)	(±1.74)
N1	24.4	22.8	23.6
N2	32.4	33.9	33.2
Mean (±1.74)	28.4	28.4	28.4

General mean: 25.7

Mean D.M. %: 18.3

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65/C/22.4

PLOT 5/1: DRY MATTER

2ND CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.58)	7.4	12.4	14.0	15.6	12.4
			(±1.16)		(±0.58)
K0	5.9	11.7	13.7	12.5	11.0
K2	8.5	11.8	14.3	15.9	12.6
K4	8.0	13.6	13.8	15.5	12.8
K8	7.2	12.6	14.2	18.3	13.1
			(±0.82)		(±0.41)
N1	7.5	11.5	12.0	13.1	11.0
N2	7.4	13.4	16.0	18.0	13.7

	K0	K2	K4	K8
			(±0.82)	
N1	9.6	11.3	11.0	12.1
N2	12.3	13.9	14.5	14.1

K1 and K6 plots

	K1	K6	Mean
	(±1.16)		(±0.82)
N1	9.8	12.9	11.4
N2	17.1	14.9	16.0
Mean (±0.82)	13.4	13.9	13.7

General mean: 12.6

Mean D.M. %: 19.5

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65/C/22.5

PLOT 5/1: DRY MATTER

3RD CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.87)	12.3	17.5	20.2	21.9	18.0
			(±1.73)		(±0.87)
K0	12.0	16.6	17.7	18.9	16.3
K2	11.9	18.7	21.9	22.6	18.8
K4	11.5	17.4	20.2	23.9	18.2
K8	13.7	17.2	21.1	22.3	18.6
			(±1.23)		(±0.61)
N1	11.8	15.6	17.3	19.7	16.1
N2	12.7	19.4	23.1	24.2	19.9

	K0	K2	K4	K8
			(±1.23)	
N1	14.8	16.4	16.9	16.3
N2	17.8	21.2	19.6	20.9

K1 and K6 plots

	K1	K6	Mean
	(±1.73)		(±1.23)
N1	18.2	17.4	17.8
N2	19.8	25.5	22.6
Mean (±1.23)	19.0	21.4	20.2

General mean: 18.4

Mean D.M. %: 24.5

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65/C/22.6

PLOT 5/1: DRY MATTER

TOTAL OF 3 CUTS

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±2.15)	35.6	54.6	62.0	69.2	55.3
			(±4.31)		(±2.15)
K0	34.8	53.2	58.2	62.1	52.0
K2	36.6	55.8	67.5	69.8	57.4
K4	36.4	57.4	62.6	72.3	57.2
K8	34.8	51.8	59.6	72.6	54.7
			(±3.05)		(±1.52)
N1	34.8	48.8	52.6	59.9	49.0
N2	36.5	60.3	71.3	78.4	61.6

	K0	K2	K4	K8
			(±3.05)	
N1	45.6	51.2	50.4	48.8
N2	58.4	63.6	63.9	60.6

K1 and K6 plots

	K1	K6	Mean
	(±4.31)		(±3.05)
N1	52.4	53.1	52.7
N2	69.2	74.3	71.8
Mean (±3.05)	60.8	63.7	62.2

General mean: 56.7

Mean D.M. %: 20.8

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65/C/22.7

PLOT 5/2: DRY MATTER

1ST CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.68)	15.7	14.3	16.2	15.1	15.3
			(±1.37)		(±0.68)
K0	15.5	13.2	18.8	13.7	15.3
K2	16.2	13.2	14.0	16.7	15.0
K4	15.0	16.7	16.5	15.8	16.0
K8	16.2	14.1	15.7	14.1	15.0
			(±0.97)		(±0.48)
N1	12.6	11.3	12.2	11.1	11.8
N2	18.9	17.3	20.3	19.1	18.9

	K0	K2	K4	K8
			(±0.96)	
N1	12.0	12.4	11.6	11.1
N2	18.6	17.6	20.4	18.9

K1 and K6 plots

	K1	K6	Mean
	(±1.37)		(±0.97)
N1	11.2	13.6	12.4
N2	18.7	14.6	16.7
Mean (±1.37)	15.0	14.1	14.5

General mean: 15.2

Mean D.M. %: 15.4

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65/C/22.8

PLOT 5/2: DRY MATTER

2ND CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.78)	19.7	19.2	19.4	19.2	19.4
			(±1.55)		(±0.78)
K0	18.2	20.5	18.2	21.6	19.6
K2	19.9	18.7	20.9	18.4	19.5
K4	22.4	18.2	20.1	18.1	19.7
K8	18.3	19.3	18.4	18.7	18.7
			(±1.10)		(±0.55)
N1	18.9	16.3	18.4	16.5	17.5
N2	20.5	22.0	20.4	22.0	21.2

	K0	K2	K4	K8
			(±1.10)	
N1	16.7	17.6	19.0	16.8
N2	22.6	21.4	20.5	20.5

K1 and K6 plots

	K1	K6	Mean
	(±1.55)		(±1.10)
N1	19.1	18.8	18.9
N2	22.5	23.0	22.7
Mean (±1.10)	20.8	20.9	20.8

General mean: 19.7

Mean D.M. %: 13.8

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65/C/22.9

PLOT 5/2: DRY MATTER

3RD CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.50)	23.2	23.4	23.5	23.5	23.4
			(±1.00)		(±0.50)
K0	22.8	23.8	25.0	24.5	24.0
K2	22.4	23.6	25.4	23.2	23.7
K4	23.2	22.9	21.9	22.8	22.7
K8	24.4	23.1	21.9	23.6	23.2
			(±0.70)		(±0.35)
N1	20.0	20.6	21.2	20.6	20.6
N2	26.5	26.1	25.9	26.4	26.2

	K0	K2	K4	K8
			(±0.70)	
N1	21.8	21.8	19.6	19.2
N2	26.2	25.6	25.9	27.3

K1 and K6 plots

	K1	K6	Mean
	(±1.00)		(±0.70)
N1	19.7	21.7	20.7
N2	27.4	26.7	27.1
Mean (±0.70)	23.6	24.2	23.9

General mean: 23.5

Mean D.M. %: 18.3

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65/C/22.10

PLOT 5/2: DRY MATTER

4TH CUT

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±0.40)	21.0	20.8	20.3	20.3	20.6
			(±0.80)		(±0.40)
K0	20.7	21.8	21.2	19.9	20.9
K2	20.7	19.4	20.6	20.0	20.2
K4	20.8	21.3	21.1	21.1	21.1
K8	21.7	20.6	18.2	20.0	20.2
			(±0.56)		(±0.28)
N1	19.3	18.2	18.9	17.8	18.5
N2	22.7	23.4	21.7	22.7	22.6

	K0	K2	K4	K8
			(±0.56)	
N1	19.4	18.8	18.2	17.7
N2	22.5	21.5	23.9	22.6

K1 and K6 plots

	K1	K6	Mean
		(±0.80)	(±0.56)
N1	19.3	18.5	18.9
N2	23.0	23.0	23.0
Mean (±0.56)	21.2	20.8	21.0

General mean: 20.6

Mean D.M. %: 21.1

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65/C/22.11

PLOT 5/2: DRY MATTER

TOTAL OF 4 CUTS

Excluding K1 and K6 plots

	P0	P1	P2	P4	Mean
Mean (±1.66)	79.6	77.6	79.5	78.1	78.7
			(±3.31)		(±1.66)
K0	77.3	79.3	83.2	79.8	79.9
K2	79.2	74.8	81.0	78.3	78.3
K4	81.4	79.1	79.6	77.9	79.5
K8	80.6	77.1	74.1	76.4	77.0
			(±2.34)		(±1.17)
N1	70.7	66.4	70.7	66.0	68.4
N2	88.5	88.7	88.3	90.2	88.9

	K0	K2	K4	K8
			(±2.34)	
N1	69.9	70.6	68.4	64.9
N2	89.9	86.0	90.6	89.2

K1 and K6 plots

	K1	K6	Mean
	(±3.31)		(±2.34)
N1	69.3	72.7	71.0
N2	91.7	87.2	89.5
Mean (±2.34)	80.5	80.0	80.2

General mean: 79.0

Mean D.M. %: 17.2

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65/C/23.1

GROWTH STUDY RESIDUES

(BV)

Residues of fertilisers applied to potatoes for growth study 1964, Highfield VI, barley 1965.

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

Area of each plot: 0.0257. Area harvested: 0.0171.

Treatments:
To potatoes 1964: All combinations of:-
1. N: None (N0), 0.75 (N1), 1.50 (N2), 3.0 cwt (N4) as 'Nitro-Chalk'.
2. P: None (P0), 1.5 cwt (P1) P2O5 as superphosphate.
3. K: None (K0), 1.5 cwt (K1) K2O as sulphate of potash.

To barley 1965: None.

Basal applications: 0.75 cwt N as 'Nitro-Chalk' combine drilled.
Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 34 gals).

Cultivations, etc.: Ploughed: Nov 17, 1964. Seed drilled at 155 lb: Mar 29, 1965. Sprayed: May 19. Combine harvested: Sept 2. Variety: Maris Badger. Previous crops: Barley 1962, spring beans 1963.

NOTES: (1) In 1964 potatoes were sampled frequently but no full-scale yields were taken.
(2) Owing to a fault in the combine harvester the yields from two adjacent plots (N3P1K1 and N0P1K0) were bulked. Estimated values were used in the analysis.

Standard error per plot.
Grain: 1.26 or 3.8% (12 d.f.)

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65/C/23.2

SUMMARY OF RESULTS

GRAIN

	N0	N1	N2	N4	Mean
Mean (±0.45)	34.9	33.0	33.3	31.2	33.1
		(±0.63)			(±0.32)
P0	34.6	33.3	31.9	31.7	32.9
P1	35.2	32.7	34.7	30.6	33.3
		(±0.63)			(±0.32)
K0	35.7	33.2	33.2	31.7	33.4
K1	34.1	32.9	33.4	30.6	32.7

	P0	P1
	(±0.45)	
K0	33.3	33.6
K1	32.5	33.0

Mean D.M. %: 71.9

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65/C/24.1

WINTER WHEAT

(BH)

Sod seeding and pests, New Zealand 1965, the first year.

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

Area of each sub-plot: 0.0226. Area harvested: 0.0150.

Treatments: All combinations of:-
Whole plots: 1. Seedbed preparation: Ploughed (M), ploughed with ioxynil* spray (I), direct seeding after paraquat** spray (P).
Sub-plots: 2. Insecticide: None (0), diazinon*** spray prior to sowing (D).

NOTE: M and I treatments were drilled at 7 in. row-spacing by farm drill, P treatments at 9 in. row-spacing by I.C.I. sod-seeding drill.

* At 26.6 grams
** At 2 lb ion in 40 gals
*** At 2 lb in 160 gals (plots 1 - 3), 2 lb in 320 gals (remainder).

Basal applications: 240 lb (6:15:15) combine drilled, 0.6 cwt N as 'Nitro-Chalk' in spring. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals).

Cultivations, etc.: M and I treatments ploughed: Nov 16, 1964. P plots sprayed with paraquat: Nov 19. Treatments M and I disc-harrowed twice and harrowed, seed drilled on all plots at 190 lb: Nov 20. P treatment rolled, M and I treatments harrowed: Nov 23. Ioxquil and diazinon applied: Nov 27. 'Nitro-Chalk' applied: Apr 14, 1965. Sprayed: May 10. Combine harvested: Sept 20. Variety: Cappelle. Previous crop: Old grass.

NOTE: Counts of soil fauna were made before drilling and at mid-season.

Standard errors per plot. Grain:
Whole plot: 2.35 or 10.3% (4 d.f.)
Sub plot: 4.63 or 20.4% (6 d.f.)

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65/C/24.2

SUMMARY OF RESULTS

GRAIN

	M	I	P	Mean
		(1) and (2)		(±1.54)
O	23.1	20.9	16.5	20.2
D	27.5	27.7	20.5	25.2
Mean (±1.35)	25.3	24.3	18.5	22.7

Mean D.M. %: 78.5

(1) (±2.33) For use in horizontal and diagonal comparisons
(2) (±2.67) For use in vertical and interaction comparisons

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65/C/25.1

INTENSIVE WINTER BARLEY GROWING EXPERIMENT

(BJ)

Hoosfield (Old Four Course) 1965

Design: 3 randomised blocks of 12 plots each.

Area of each plot: 0.0386. Area harvested: 0.0256.

Treatments: All combinations of:-

1. Crop sequences:

	1965	1966	1967	1968
1	B	B	B	B
2	O	B	Be	B
3	B	Be	B	B
4	Be	B	O	B

O = Winter oats, Be = Winter beans, B = Winter barley.

2. Nitrogen: To beans - none,
to barley after beans - none (N0), 0.25 (N1), 0.5 (N2) cwt N as 'Nitro-Chalk' in spring,
to oats and remaining barley - 0.25 (N1), 0.5 (N2), 0.75 (N3) cwt N.

Basal applications: 0.5 cwt P_2O_5, 0.5 cwt K_2O as compound 0:20:20 combine drilled to cereals, placement drilled to beans.
Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 34 gals) to barley and oats.

Cultivations, etc.: Ploughed: Oct 14, 1964.
Barley: Seed drilled at 150 lb: Oct 29, 1964. 'Nitro-Chalk' applied: Apr 13, 1965. Sprayed: May 14. Combine harvested: Aug 17. Variety: Pioneer.
Oats: Seed drilled at 160 lb: Oct 29, 1964. 'Nitro-Chalk' applied: Apr 13, 1965. Sprayed: May 14. Combine harvested: Aug 27. Variety: Padarn.
Beans: Seed drilled at 275 lb: Nov 4, 1964. Combine harvested: Sept 28. Variety: Garton's Pedigree.
Previous crops: Spring barley 1963 and 1964.

NOTES: (1) Yields were taken only for sequences 1, 2 and 3.
(2) Estimates of eyespot (Cercosporella herpotrichoides) and take-all (Ophiobolus graminis) were made.

Standard errors per plot. Grain:
Barley: 1.92 or 9.5% (13 d.f.)
Oats: 2.22 or 9.3% (4 d.f.)

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65/C/25.2

SUMMARY OF RESULTS

BARLEY GRAIN

N1	N2	N3	Mean
14.4	21.8 (±0.78)	24.7	20.3

Mean D.M. %: 85.3

OATS GRAIN

N1	N2	N3	Mean
20.9	23.4 (±1.28)	26.9	23.8

Mean D.M. %: 72.5

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65/C/26.1

LEGUMES AND BARLEY

(BP)

Effects of crop sequences and green manures - Stackyard 1965, the first year - Barley.

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

Area of each sub-plot: 0.0199. Area harvested: 0.0133.

Treatments: All combinations of:-

Whole plots:

1. Crop sequences (C):

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

Sub-plots:

2. Nitrogen: 0.4 (N1), 0.8 (N2), cwt N as 'Nitro-Chalk' in seedbed (none to beans and hay).

B = Barley, H = Hay, O = Oats, Be = Spring beans, Cl = Red Clover, T = Trefoil.

Basal applications: 280 lb compound 0:20:20 broadcast. Weedkiller: MCPB at 2 lb a.e. in 40 gals.

Cultivations, etc.: Ploughed: Nov 24, 1964. Rotary cultivated: Mar 15 and 31, 1965. Basal PK applied: Apr 2. Rotary cultivated, barley drilled at 155 lb: Apr 3. 'Nitro-Chalk' applied, trefoil at 30 lb, clover at 30 lb sown: Apr 5. Sprayed: May 20. Combine harvested: Sept 1. Varieties: Barley - Maris Badger, trefoil - English, clover - Broad Red. Previous crops: Kale and potatoes 1963, barley 1964.

Standard errors per plot. Grain:

Whole plot: 0.65 or 1.6% (9 d.f.)
Sub plot: 1.15 or 2.8% (10 d.f.)

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65/C/26.2

SUMMARY OF RESULTS

	N1	N2	Mean
	(1) and (2)		
C1	39.5	41.2	40.3
	(3) and (4)		
C2,3,9,10	41.5	41.5	41.5
	(5) and (6)		
C4,5,6,7,8	41.7	40.7	41.2
Mean	41.4 (±0.26)	41.1	41.2

Mean D.M.%: 77.4

(1) (±0.74) (3) (±0.48) (5) (±0.43) For use in vertical and diagonal comparison
(2) (±0.81) (4) (±0.41) (6) (±0.36) For use in horizontal and interaction comparison

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65/C/27.1

PREVIOUS CROPS X N FOR BARLEY

(BQ)

The effect of previous cropping and nitrogen on the yield of barley - Stackyard 1965, the 1st year.

Crops in 1965: Spring wheat, kale and ryegrass.

Design for 1966: 3 randomised blocks of 9 plots.

Area of each plot: 0.0321. Area harvested: Spring wheat - 0.0214, kale - 0.0161, ryegrass - 0.0069.

Treatments applied in 1965: All combinations of:-
1. Cropping: Spring wheat (W), kale (K), Italian ryegrass (G).
2. Nitrogen: None (N0), 1.0 (N2), 2.0 cwt (N4) N as 'Nitro-Chalk'.

NOTE: Barley 1966 will test in addition:
3. Nitrogen: None (N0), 0.5 (N1), 1.0 cwt (N2) as 'Nitro-Chalk'.

Basal applications: 1.0 cwt P_2O_5, 2.0 cwt K_2O as compound (0:14:28).
Weedkillers: To wheat: MCPA at 1.12 lb and dicamba at 0.08 lb in 40 gals, to ryegrass: 0.44 lb 2,4-D butoxyethylester in 40 gals.

Cultivations, etc.: Ploughed: Nov 24, 1964. Rotary cultivated twice: Mar 15 and 31, 1965. Basal PK applied, N applied: Apr 2.
Spring wheat: Seed drilled at 188 lb: Apr 3, 1965. Sprayed: May 22. Combine harvested: Sept 20. Variety: Opal.
Kale: Rotary cultivated: May 10, 1965. Seed drilled at 2 lb: May 12. Harvested: Nov 1. Variety: Thousand Head Canson.
Ryegrass: Seed drilled at 40 lb: Apr 3, 1965. Sprayed: June 2. Cut 3 times: July 7, Aug 9, Oct 7. Variety: Italian.

NOTE: Samples were taken from each crop at harvest for estimation of N percentage. Soil samples were taken after harvest for estimation of mineralisable N.

Standard errors per plot.

Spring wheat, grain:	2.70 or 7.4% (4 d.f.)
Kale, fresh weight:	2.231 or 11.8% (4 d.f.)
Ryegrass, dry matter, 1st cut:	4.83 or 16.9% (4 d.f.)
2nd cut:	2.52 or 14.3% (4 d.f.)
3rd cut:	3.41 or 35.7% (4 d.f.)
Total of 3 cuts:	7.46 or 13.4% (4 d.f.)

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65/C/27.2

SUMMARY OF RESULTS

N0	N2	N4	Mean
	SPRING WHEAT		
	GRAIN		
	(±1.56)		
28.4	40.4	41.4	36.7
	STRAW		
29.8	39.3	36.8	35.3

Mean D.M.%: Grain 75.9
Straw 78.1

	KALE		
	FRESH WEIGHT		
	(±1.288)		
13.23	19.87	23.66	18.92

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65/C/27.3

RYEGRASS

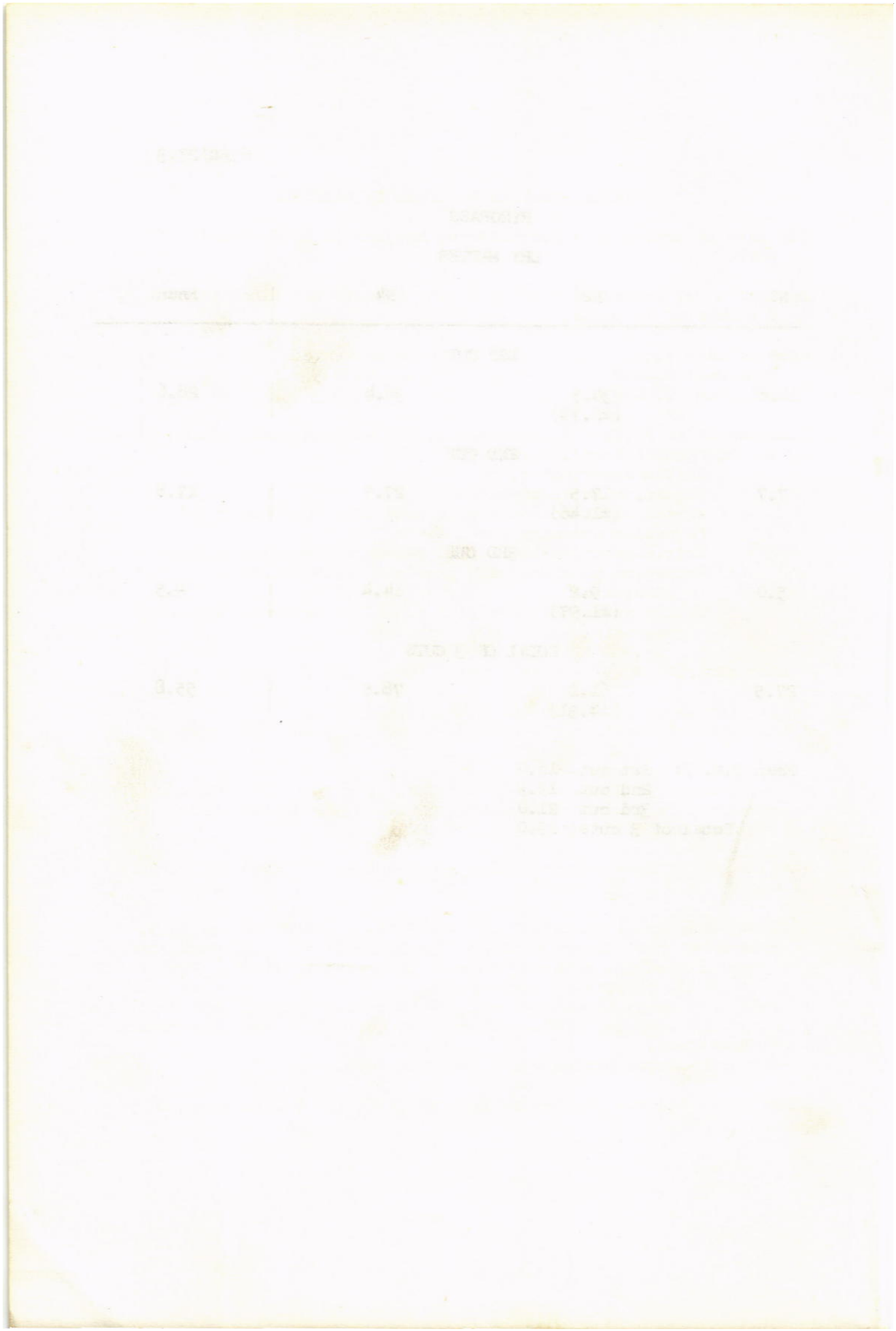
DRY MATTER

N0	N2	N4	Mean
	1ST CUT		
14.8	34.5 (±2.79)	36.4	28.6
	2ND CUT		
7.7	17.5 (±1.46)	27.7	17.6
	3RD CUT		
5.0	9.2 (±1.97)	14.4	9.5
	TOTAL OF 3 CUTS		
27.5	61.2 (±4.31)	78.5	55.8

Mean D.M. %: 1st cut 16.0
2nd cut 19.9
3rd cut 21.0
Total of 3 cuts 19.0

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65/C/28.1

EARLY POTATOES FOLLOWED BY RADISHES

The rate of action of P fertilisers, Sawyers II 1965, the first year.

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

Area of each plot.	Area harvested.
Potatoes: 0.0018	0.0009
Radishes: 0.0006	0.0003

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

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

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

2. Levels of P: 24 lb (L1), 48 lb (L2) P.
3. Type of fertiliser: Powder, less than 1 mm. (P), granular 2-5 mm. (G).

All applied to potatoes with 'Nitro-Chalk', muriate of potash and kieserite in amounts adjusted to give a total of 100 lb N, 200 lb K and 50 lb Mg.

Basal applications: Ground chalk at 15 cwt. To radishes: 60 lb N and 50 lb K as (16:0:16).

Cultivations, etc.: Ploughed: Jan 11, 1964. Limed: Mar 3, 1965.
Potatoes: Fertilisers applied: Apr 5, 1965. Fertilisers rotary cultivated in, potatoes planted on the flat: Apr 6. Harvested: July 13. Variety: Arran Pilot.
Radishes: Basal NK applied and rotary cultivated in, seed drilled at 15 lb: July 19, 1965. Harvested: Sept 10. Variety: French Breakfast.
Previous crops: Spring wheat 1963 and 1964.

NOTE: The soil was sampled in December 1964 for P determination.

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Standard errors per plot.
Potatoes, Total tubers: 1.134 or 12.2% (90 d.f.)
Radishes, Fresh weight: 1.511 or 13.2% (90 d.f.)

SUMMARY OF RESULTS

	O	S	K	SK	M	SM	KM	SKM	Mean
POTATOES: TOTAL TUBERS									
									(±0.152)
Mean	6.02	11.26	9.44	10.93	8.09	9.65	8.87	9.91	9.27*
L1		10.07	8.50	9.80	7.51	8.38	8.12	9.06	8.78
L2		12.46	10.37	12.06	8.67	10.92	9.61	10.77	10.69
P		10.38	10.62	11.38	9.97	9.96	9.78	10.38	10.35
G		12.15	8.26	10.48	6.21	9.35	7.95	9.45	9.12
RADISHES: FRESH WT: TONS PER ACRE									
									(±0.202)
Mean	5.43	12.05	12.28	12.07	12.46	11.93	12.75	12.62	11.45*
L1		10.65	11.44	10.69	11.20	10.75	11.35	12.18	11.18
L2		13.46	13.11	13.45	13.73	13.10	14.15	13.07	13.44
P		11.80	11.27	11.37	12.46	11.41	11.64	12.87	11.83
G		12.30	13.28	12.77	12.47	12.44	13.85	12.38	12.78

* General mean

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65/C/29.1

SPRING WHEAT

(BR, BS and WBM)

Effects of formalin and nitrogen, Rothamsted (R) Pastures (pathogen free) and Little Knott I (pathogen infected), Woburn (W) Horsepool (pathogen free) 1965.

Design: Pastures (R) and Horsepool (W): 2 randomised blocks of 8 plots.
Little Knott I (R): 4 randomised blocks of 8 plots.

Area of each plot: 0.0032. Area harvested: 0.0011.

Treatments: All combinations of:-
Formalin: None (O), sprayed with a 38% solution of formaldehyde at 266 gals in 3700 gals (F).
N: None (N0), 0.5 (N1), 1.0 (N2), 1.5 (N3) cwt as 'Nitro-Chalk'.

Basal applications: 280 lb (0:20:20). Weedkiller (Rothamsted only): Dichlorprop/MCPA (Cornox RK Extra at 6 pints in 60 gals).

Cultivations, etc.:-
Pastures (R): Ploughed: Dec 1, 1964. Formalin and PK basal compound applied: Feb 25, 1965. 'Nitro-Chalk' applied (first half dressing), seed sown at 180 lb: Mar 31. 'Nitro-Chalk' applied (2nd half dressing): May 17. Sprayed: May 20. Harvested: Sept 15. Variety: Opal. Previous crops: Grass 1963, spring wheat 1964.
Little Knott I (R): Ploughed: Oct 13, 1964. Chisel ploughed: Dec 23. Formalin and PK basal compound applied: Feb 25, 1965. 'Nitro-Chalk' applied (first half dressing), seed sown at 180 lb: Mar 31. 'Nitro-Chalk' applied (2nd half dressing): May 17. Sprayed: May 20. Harvested: Sept 6. Variety: Opal. Previous crops: Barley 1963 and 1964.
Horsepool (W): Chisel ploughed: Nov 2, 1964. Formalin applied: Dec 22. PK basal compound applied: Feb 10, 1965. Seed sown at 180 lb, 'Nitro-Chalk' (first half dressing) applied: Mar 15. 'Nitro-Chalk' (2nd half dressing) applied: May 14. Plots abandoned because of severe lodging and damage by sparrows, no yields taken: Aug 26. Variety: Opal. Previous crops: Winter wheat 1963, potatoes 1964.

NOTE: Soil samples were taken for determination of mineralisable N and pH. On Horsepool (W) green crop samples were taken for yield and N determination. Samples were taken at harvest for N determination.

Standard errors per plot. Grain:
Pastures (pathogen free) (R): 2.34 or 8.5% (7 d.f.)
Little Knott I (pathogen infected) (R): 2.43 or 8.6% (21 d.f.)

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SUMMARY OF RESULTS

GRAIN

	N0	N1	N2	N3	Mean
PASTURES (R)					
		(±1.65)			(±0.83)
O	33.6	32.7	24.1	18.5	27.2
F	35.9	28.5	25.1	21.7	27.8
Mean (±1.17)	34.7	30.6	24.6	20.1	27.5
LITTLE KNOTT (R)					
		(±1.21)			(±0.61)
O	17.0	28.3	26.6	26.2	24.5
F	23.9	34.9	35.4	32.5	31.7
Mean (±0.86)	20.4	31.6	31.0	29.4	28.1

Mean D.M. %: Pastures (R): 77.1
Little Knott (R): 82.3

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65/C/29.3

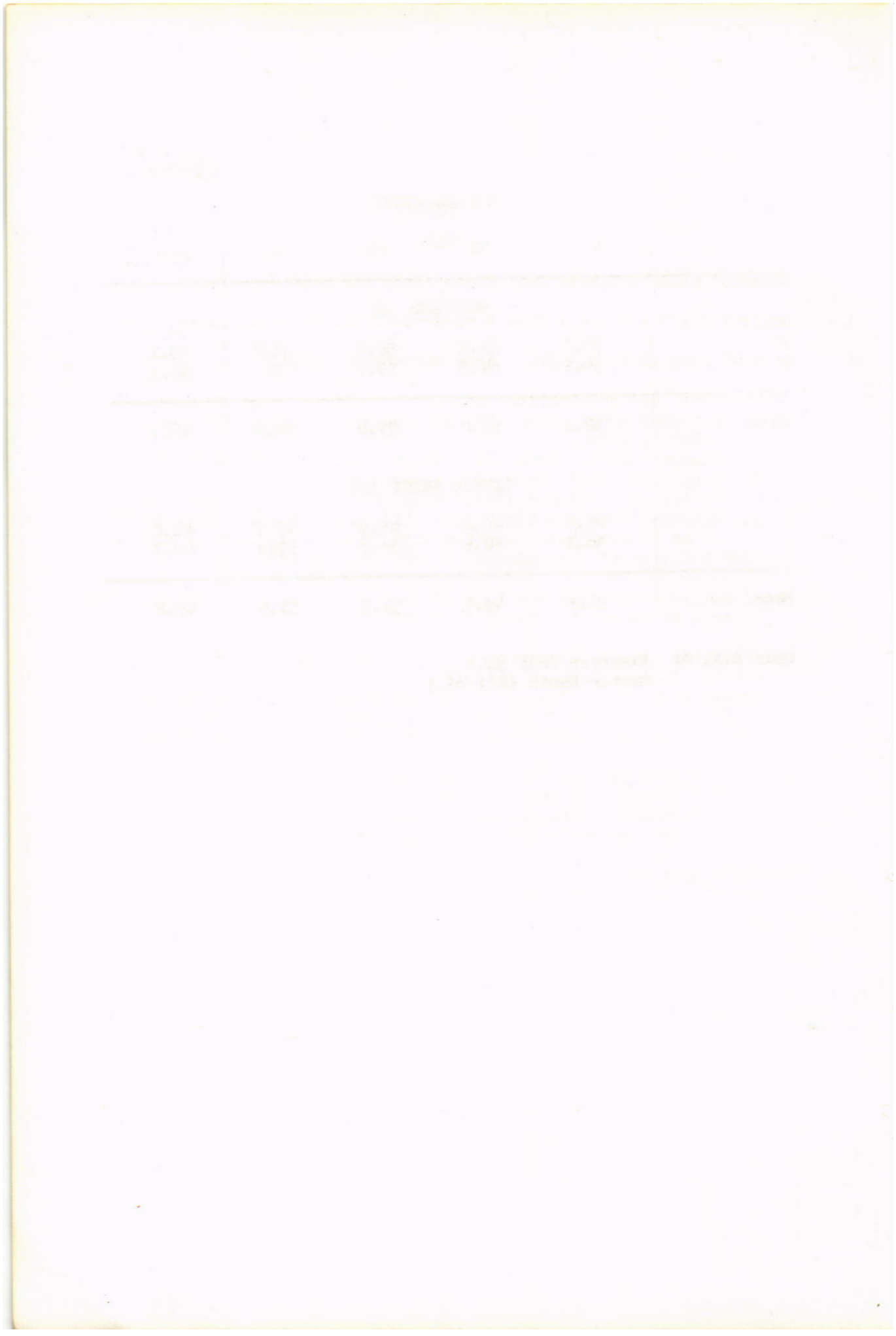
STRAW

	N0	N1	N2	N3	Mean
			PASTURES (R)		
O	50.0	61.2	56.6	52.8	55.1
F	54.1	64.3	59.0	6.0	58.3
Mean	52.1	62.8	57.8	54.4	56.7
			LITTLE KNOTT (R)		
O	27.0	46.8	45.9	47.7	41.8
F	34.1	52.5	56.8	55.4	49.7
Mean	30.5	49.7	51.3	51.5	45.8

Mean D.M. %: Pastures (R): 52.1
Little Knott (R): 82.5

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65/C/30.1

SPRING WHEAT

(WBL)

'Scorch' study - Woburn Butt Close 1965, the second year.

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

Area of each plot: 0.0032. Area harvested: 0.0011.

Treatments: All combinations of:-

1. Fumigant 1965: None (0), sprayed with formalin *(F) on Dec 7, 1964.
2. Fumigant 1964: None (0), sprayed twice with formalin *(R).
3. Fungicide 1964: None (0), sprayed with nabam (S).
4. Irrigation 1964 and 1965: None (0), irrigated (W).
5. Nitrogen 1964 and 1965: 0.6 (N1), 1.2 (N2), 1.8 (N3) cwt N as 'Nitro-Chalk' applied half in seedbed, half on May 14.

* A 38% solution of formaldehyde at 266 gals in 3700 gals.

Basal applications: 2.5 cwt (0:20:20). Weedkiller: Dichlorprop/MCPA (Cornox RK Extra at 6 pints in 50 gals) on 2 occasions.

Cultivations, etc.: Ploughed: Nov 24, 1964. Basal dressing applied: Feb 10, 1965. Seedbed N applied, seed sown at 180 lb: Mar 12. Sprayed: May 7 and 21. W plots irrigated - 0.375 in: May 25, 0.125 in: June 1, 0.75 in: June 15. Harvested: Aug 31. Variety: Opal. Previous crops: Spring beans 1962, winter wheat 1963.

NOTES: (1) For previous year's results etc. see 'Results' 64/Da/3.
(2) Green crop samples were taken on 3 occasions for yield and N determination. Samples were taken for N determination at threshing.

Standard eror per plot.
Grain: 1.51 or 7.5% (8 d.f.)

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SUMMARY OF RESULTS

GRAIN

	O	R	O	W	N1	N2	N3	O	S	Mean
	(±0.51)		(±0.51)			(±0.63)		(±0.51)		(±0.36)
O	10.3	14.1	13.4	11.0	7.7	13.5	15.3	12.9	11.4	12.2
F	32.5	24.0	27.2	29.3	24.3	31.2	29.2	28.4	28.1	28.3
			(±0.51)			(±0.63)		(±0.51)		
O			21.6	21.2	17.8	23.2	23.2	22.1	20.7	21.4
R			19.0	19.1	14.2	21.6	21.4	19.2	18.9	19.1
						(±0.63)		(±0.51)		
O					16.6	21.4	23.0	20.7	19.9	20.3
W					15.4	23.4	21.6	20.6	19.7	20.1
								(±0.63)		(±0.44)
N1								15.0	17.0	16.0
N2								23.6	21.2	22.4
N3								23.4	21.2	22.3
Mean (±0.36)								20.7	19.8	20.2

Mean D.M. %: 81.7

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65/C/30.3

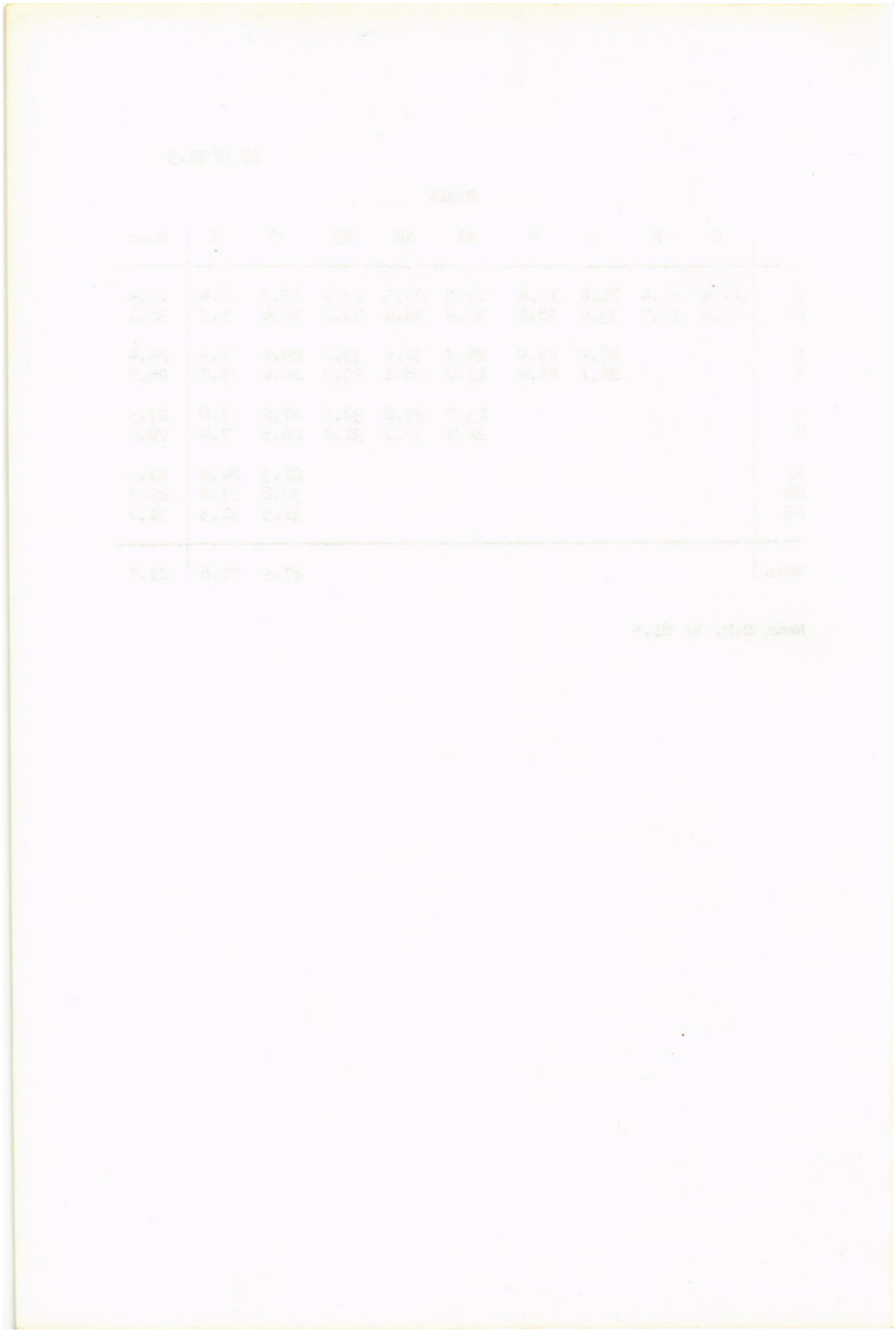
STRAW

	O	R	O	W	N1	N2	N3	O	S	Mean
O	17.4	21.4	21.4	17.4	14.9	20.3	23.0	19.3	19.4	19.4
F	41.5	30.7	33.6	38.5	30.9	38.4	39.0	36.4	35.7	36.1
O			28.9	29.9	24.7	30.6	33.0	29.4	29.5	29.4
R			26.1	26.0	21.0	28.1	29.0	26.4	25.7	26.0
O					23.7	27.8	30.9	27.2	27.8	27.5
W					22.0	30.8	31.0	28.5	27.4	28.0
N1								21.3	24.4	22.9
N2								30.8	27.9	29.3
N3								31.5	30.5	31.0
Mean								27.9	27.6	27.7

Mean D.M. %: 81.5

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65/C/31.1

COMPARISON OF FUMIGANTS

(WBO)

Nitrogen, fumigants and water - Woburn Butt Close, spring wheat 1965.

Design: 4 randomised blocks of 16 plots.

Area of each plot: 0.0021. Area harvested: 0.0019.

Treatments: All combinations of:-

1. Fumigants:
   - None. (O)
   - None, plots rotary cultivated. (CR)
   - Methyl bromide applied under gas tight sheet at 436 lb. (MB)
   - Dichloropropane/dichloropropene at 800 lb, injected at 12 in. spacing. (DD)
   - Chloropicrin at 400 lb injected at 12 in. spacing. (Chp)
   - Dazomet at 400 lb rotary cultivated in. (Daz)
   - Formalin as drench at 200 gals formaldehyde in 40% solution. (For)
   - Mercuric chloride at 5 lb Hg rotary cultivated in. (Mer)
2. Nitrogen: 0.6 (N1), 1.8 (N3) cwt N as 'Nitro-Chalk' half in seedbed, half in May.

It was intended to apply to sub plots:

3. Irrigation: None (WO), water according to irrigation need (WW). but no irrigation was in fact applied as there was plenty of rain.

Basal applications: 2 cwt (0:20:20) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals).

Cultivations, etc.: Ploughed: Nov 24, 1964. Fumigants applied: Nov 30. Appropriate plots rotary cultivated: Dec 4. Seed drilled at 180 lb: Mar 29, 1965. First dressing of 'Nitro-Chalk' applied: Mar 30, second: May 7. Sprayed: May 11. Harvested by hand: Aug 31. Variety: Opal. Previous crops: Winter wheat 1963, barley 1964.

NOTE: Soil samples were taken to estimate initial population of cereal cyst-nematode (Heterodera avenae), plant samples for weighing of tops and roots and for estimation of nematode invasion of roots, and for nematodes in roots late in the season. Soil samples were taken to estimate nematode population at end of season.

Standard error per plot.
Grain: 3.80 or 14.2% (45 d.f.)

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SUMMARY OF RESULTS

GRAIN

	O	CR	MB	DD	Chp	Daz	For	Mer	Mean
				(±1.90)					(±0.67)
N1	21.8	19.3	24.9	33.0	32.3	29.1	30.7	19.6	26.4
N3	22.9	22.1	31.5	28.1	31.0	24.4	29.7	25.9	27.0
Mean (±1.34)	22.4	20.7	28.2	30.6	31.7	26.8	30.2	22.8	26.7

Mean D.M. %: 83.9

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65/C/32.1

GRASS

Effect of K on protein synthesis - Woburn Stackyard Series C 1965.

Design: 4 randomised blocks of 10 plots.

Area of each plot: 0.0138. Area harvested: 1st, 2nd and 4th cuts - 0.0008, 3rd cut - 0.0007.

Treatments: All combinations of:-
1. Species: Cocksfoot S37 (C), Meadow Fescue S215 (M).
2. Levels of K: None (K0), 60 (K1), 120 (K2), 180 (K3), 240 lb K (K4) as muriate of potash.

Basal applications: 0.3 cwt N as 'Nitro-Chalk', 0.5 cwt P as granular superphosphate rotary cultivated into seedbed. 100 lb N as ammonium nitrate in spring and after every cut except the last.

Cultivations, etc.: Chisel ploughed: Sept 7, 1964. Basal superphosphate and 'Nitro-Chalk' applied, seed sown at 25 lb: Sept 17. Ammonium nitrate and first half dressing of K applied: Apr 1, 1965. Second half dressing of K applied: May 21. Cut four times: May 21, July 2, Aug 11 and Oct 11. Ammonium nitrate applied after first 3 cuts. Previous crops: Fallow 1963 and 1964.

NOTE: After each cut samples were analysed for total N and protein N and for K.

Standard errors per plot. Dry matter:

1st cut:	1.92 or 8.7% (27 d.f.)
2nd cut:	1.97 or 8.7% (27 d.f.)
3rd cut:	1.46 or 6.4% (27 d.f.)
4th cut:	1.44 or 6.5% (27 d.f.)
Total of 4 cuts:	3.47 or 3.9% (27 d.f.)

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65/C/32.2

SUMMARY OF RESULTS

DRY MATTER

	K0	K1	K2	K3	K4	Mean
1ST CUT						
			(±0.96)			(±0.43)
C	20.3	21.3	23.6	21.9	21.6	21.7
M	21.9	22.7	22.5	21.7	22.9	22.3
Mean (±0.68)	21.1	22.0	23.0	21.8	22.3	22.0
2ND CUT						
			(±0.99)			(±0.44)
C	23.6	22.3	24.2	23.4	24.3	23.6
M	22.3	24.6	23.1	20.1	19.6	21.9
Mean (±0.70)	22.9	23.4	23.7	21.8	21.9	22.7
3RD CUT						
			(±0.73)			(±0.33)
C	21.7	21.4	23.1	22.5	23.6	22.4
M	22.1	23.5	23.3	22.9	23.3	23.0
Mean (±0.51)	21.9	22.4	23.2	22.7	23.4	22.7

Mean D.M. %: 1st cut: 20.1
2nd cut: 25.2
3rd cut: 21.6

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65/C/32.3

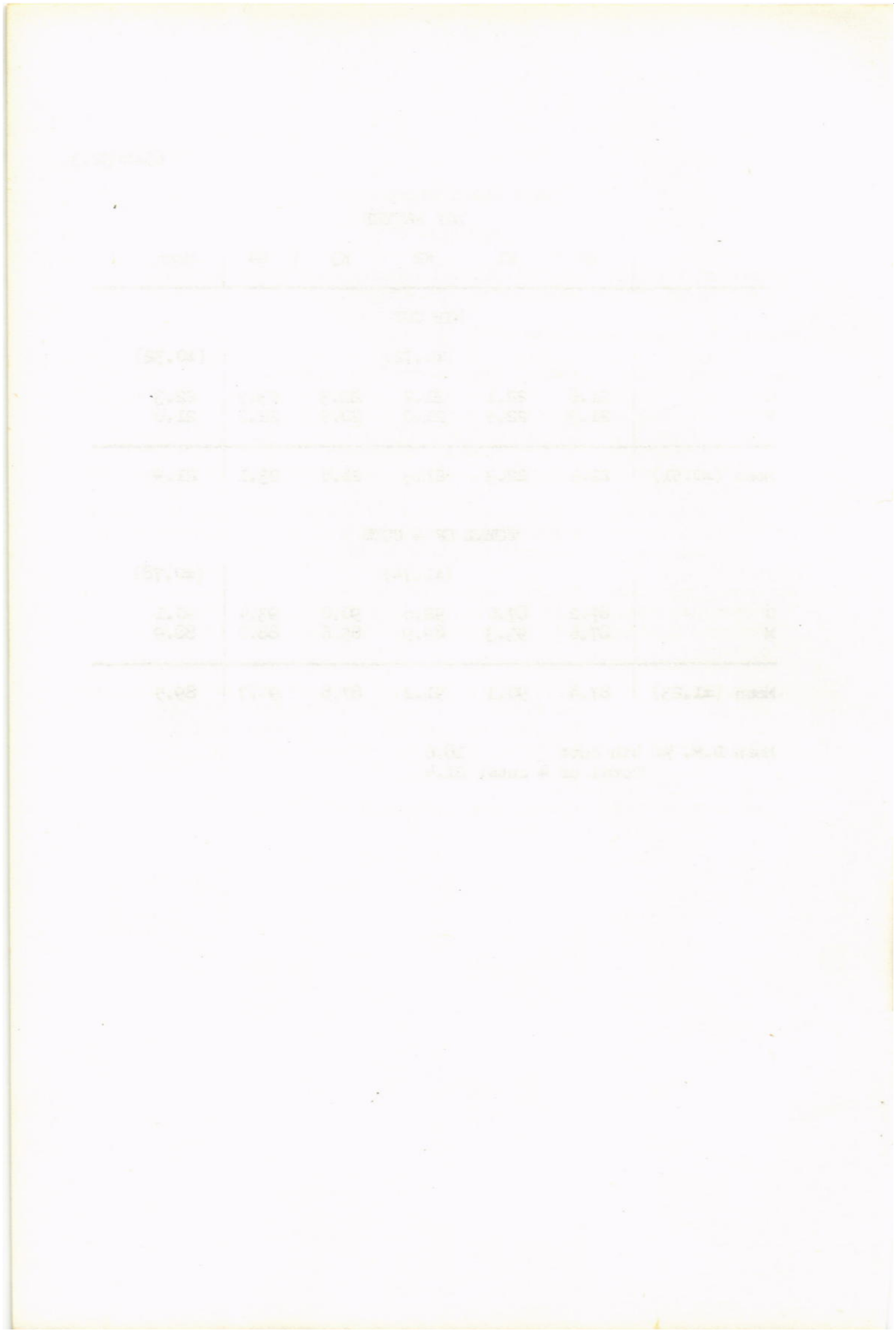
DRY MATTER

	K0	K1	K2	K3	K4	Mean
			4TH CUT			
			(±0.72)			(±0.32)
C	21.6	22.1	21.7	22.3	23.9	22.3
M	21.3	22.5	21.0	20.9	22.2	21.6
Mean (±0.51)	21.5	22.3	21.3	21.6	23.1	21.9
			TOTAL OF 4 CUTS			
			(±1.74)			(±0.78)
C	87.2	87.0	92.6	90.0	93.4	90.1
M	87.6	93.3	89.9	85.6	88.0	88.9
Mean (±1.23)	87.4	90.1	91.2	87.8	90.7	89.5

Mean D.M. %: 4th cut: 18.6
Total of 4 cuts: 21.4

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65/C/33.1

PARK GRASS MICROPLOTS

(PGM 41 - 80)

Effects of N levels and frequency of cutting on old grass, plot 6 (P K Na Mg 1869 - 1964 unlimed), 1965.

Design: 4 randomised blocks of 10 plots.

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

Treatments: All combinations of:-

1. N: None (N0), 129 (N1), 258 (N2), 387 lb N (N3) applied as 'Nitro-Chalk' in 3 or 6 equal dressings, one per cut.
2. Number of cuts: 3 (C3), 6 (C6). C3 coincides with the 2nd, 4th and 6th cuts.

Each block also included 2 additional plots - treatments SN0C3 and SN0C6, where S signifies herbicide spray, mecoprop at 45 oz in 50 gals to kill legumes (applied on May 11, 1965).

Basal applications: Manures as in previous years (30 lb P as superphosphate, 200 lb K as potassium sulphate, 14 lb Na as sodium sulphate, 10 lb Mg as magnesium sulphate) ground chalk - 69 cwt.

Cultivations, etc.: P, K, Na and Mg fertilisers applied: Nov 27, 1964. Ground chalk applied: Feb 2, 1965. 'Nitro-Chalk' applied: Mar 9. Cut: May 18, June 9, July 12, Aug 9, Sept 24, Oct 27. 'Nitro-Chalk' applied after every cut except the last.

Standard error per plot.
Dry matter, total of all cuts: 3.43 or 4.9% (27 d.f.)

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65/C/33.2

SUMMARY OF RESULTS

DRY MATTER: TOTAL OF ALL CUTS

	NO	SNO	N1	N2	N3	Mean
			(±1.71)			(±0.77)
C3	59.6	36.4	84.8	107.7	111.9	80.1
C6	40.1	26.1	62.0	79.9	93.1	60.3
Mean (±1.21)	49.8	31.2	73.4	93.8	102.5	70.2

Mean D.M. %: 3 cut plots: 17.8
6 cut plots: 16.5

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65/Da/2.1

WINTER AND SPRING WHEAT

(RW 201)

Varieties and nitrogen - Long Hoos IV 1965.

Design: 4 randomised blocks of 12 plots each, with 6 winter and 6 spring wheat plots in separate sub-blocks.

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

Treatments: All combinations of:-

1. Varieties: Winter wheat:- Cappelle (C), Rothwell Perdix (R). Seed rate 175 lb.
   Spring wheat:- Kloka (K), Opal (O). Seed rate 188 lb.
2. Nitrogen: 0.5 (N1), 0.75 (N2), 1.00 cwt (N3) N as 'Nitro-Chalk'.

Basal applications:

Winter wheat: 280 lb (6:15:15) combine drilled Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals).
Spring wheat: 210 lb (0:20:20) combine drilled Mecoprop/2,4-D (Methoxone Extra at 6 pints in 40 gals).

Cultivations, etc.: Chisel ploughed: Sept 23, 1964. Winter wheat drilled: Oct 22. Spring wheat drilled: Mar 30, 1965. 'Nitro-Chalk' applied: Spring wheat - Apr 2, winter wheat - Apr 13. Winter wheat sprayed: May 6. Spring wheat sprayed: May 13. Combine harvested: Sept 20. Previous crops: Winter wheat 1963, potatoes 1964.

Standard errors per plot. Grain:

Winter wheat: 2.25 or 6.7% (15 d.f.)
Spring wheat: 2.92 or 9.0% (15 d.f.)

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SUMMARY OF RESULTS

GRAIN

WINTER WHEAT

	N1	N2	N3	Mean
		(±1.12)		(±0.65)
C	34.9	34.2	31.6	33.6
R	33.7	32.0	35.1	33.6
Mean (±0.79)	34.3	33.1	33.4	33.6

Mean D.M. %: 79.4

SPRING WHEAT

		(±1.46)		(±0.84)
K	34.2	33.9	35.4	34.5
O	32.3	28.0	29.9	30.1
Mean (±1.03)	33.3	31.0	32.7	32.3

Mean D.M. %: 79.7

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65/Da/3.1

WINTER WHEAT

(RW 401 and WW 101)

Row spacing, seed rates and N - Rothamsted (R) Whittlocks and Woburn (W) Broadmead III 1965.

Design: 4 randomised blocks of 8 plots, split into 3 for N.

Area of each sub plot: 0.0045.

Treatments: All combinations of:-

Whole plots:

1. Row spacing etc.:
   - Seed broadcast, autumn fertiliser** broadcast (B)
   - Seed drilled, 4 inch rows, autumn fertiliser broadcast (C)
   - Seed drilled, 7 inch rows, autumn fertiliser broadcast (W)
   - Seed drilled, 7 inch rows, with autumn fertiliser combine drilled. (W*)
2. Seed rates:
   - Whittlocks (R): 128 lb (L), 236 lb (H)
   - Broadmead I (W): 139 lb (L), 231 lb (H).

Sub plots:

3. 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 330 lb.

Basal application: Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals).

Cultivations, etc.:-

Whittlocks (R): Chisel ploughed: Oct 5, 1964. Seed sown, autumn fertiliser applied: Oct 27. 'Nitro-Chalk' applied: Apr 14, 1965. Sprayed: Apr 30. Combine harvested: Sept 14. Variety: Cappelle. Previous crops: Spring wheat 1963, potatoes 1964.

Broadmead III (W): Chisel ploughed: Oct 17, 1964. Autumn fertiliser applied, seed sown: Oct 23. 'Nitro-Chalk' applied: Apr 7. Sprayed: May 6. Combine harvested: Sept 15. Variety: Cappelle. Previous crops: Barley 1963, potatoes 1964.

NOTE: Whittlocks (R)

(1) Plant counts were made on Mar 18, 1965.

(2) Owing to a fault in the combine harvester the yields from two adjacent sub plots (WL N2 and WL N3) were bulked. Estimated yields were used in the analysis.

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Standard errors per plot. Grain:
Whittlocks (R) Whole plot: 2.24 or 5.6% (20 d.f.)
Sub plot: 2.13 or 5.3% (47 d.f.)
Broadmead III (W) Whole plot: 2.07 or 5.5% (21 d.f.)
Sub plot: 5.80 or 15.4% (48 d.f.)

SUMMARY OF RESULTS

GRAIN

ROTHAMSTED

	B	C	W	W*	Mean
		(±1.12)			(±0.56)
L	44.3	42.7	44.0	42.8	43.5
H	37.6	36.4	35.2	36.7	36.5
		(1) and (2)			(±0.38)
N1	44.6	44.1	42.9	43.7	43.8
N2	39.4	39.2	39.9	40.2	39.7
N3	38.8	35.3	36.1	35.4	36.4
Mean (±0.79)	40.9	39.6	39.6	39.8	40.0

	L	H
	(3) and (4)	
N1	46.4	41.2
N2	43.6	35.8
N3	40.4	32.5

Mean D.M. %: 78.5

(1) ±0.75 (3) ±0.53 For use in vertical and interaction comparisons.
(2) ±1.00 (4) ±0.71 For use in horizontal and diagonal comparisons.

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65/Da/3.3

GRAIN

WOBURN

	B	C	W	W*	Mean
		(±1.04)			(±0.52)
L	42.4	38.9	37.8	39.8	39.7
H	38.0	35.5	35.3	34.1	35.7
		(1) and (2)			(±1.03)
N1	45.3	39.0	39.3	39.8	40.8
N2	40.0	37.8	39.4	35.3	38.1
N3	35.3	34.7	31.0	35.8	34.2
Mean (±0.73)	40.2	37.2	36.6	37.0	37.7

	L	H
	(3) and (4)	
N1	41.6	40.1
N2	41.1	35.1
N3	36.4	32.0

Mean D.M. %: 80.7

(1) ±2.05 (3) ±1.45 For use in vertical and interaction comparisons.
(2) ±1.83 (4) ±1.29 For use in horizontal and diagonal comparisons.

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65/Da/1

WINTER WHEAT

(RW 301)

Varieties and nitrogen - Highfield Drive 1965.

Design: 4 randomised blocks of 6 plots each.

Area of each plot: 0.0145. Area harvested: 0.0094.

Treatments. All combinations of:-
1. Varieties: Cappelle (C), Rothwell Perdix (R).
2. Nitrogen: 0.5 (N1), 0.75 (N2), 1.00 (N3) cwt N as 'Nitro-Chalk'.

Basal applications: 280 lb (6: 15: 15) combine drilled Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals).

Cultivations, etc.: Ploughed: Oct 16, 1964. Seed drilled at 175 lb: Oct 22. 'Nitro-Chalk' applied: Apr 13, 1965. Sprayed: Apr 30. Combine harvested: Aug 26. Previous crops: Winter wheat 1963, barley 1964.

NOTE: All plots were severely damaged by birds shortly before harvest.

Standard error per plot.
Grain: 3.27 or 14.1% (15 d.f.)

SUMMARY OF RESULTS

GRAIN

	N1	N2	N3	Mean
		(±1.63)		(±0.94)
C	22.5	24.1	23.9	23.5
R	22.5	22.6	23.4	22.8
Mean (±1.16)	22.5	23.3	23.6	23.2

Mean D.M. %: 75.2

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65/Da/4.1

WINTER WHEAT

(RW 501)

Spun seed and cultivations, Whittlocks 1965.

Design: 4 randomised blocks of 3 plots, split into 2 for seed rate (unrandomised).

Area of each sub-plot: 0.0103. Area harvested: 0.0068.

Treatments: All combinations of:-

1. Seedbed cultivations: Harrow, sow, harrow (S), sow, spring-tine cultivate, harrow (P), sow, harrow (R).
2. Seed rates: 220 (L), 280 lb (H) broadcast across plots by spinner.

Basal applications: 310 lb (6:15:15) applied by spinner before sowing, 0.84 cwt N as 'Nitro-Chalk' top-dressed in spring. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals).

Cultivations, etc.: Chisel ploughed: Oct 5, 1964. Spring-tine cultivated: Oct 22. Basal NPK applied, S plots harrowed, seed sown, P plots spring-tine cultivated, all plots harrowed: Oct 28. All plots harrowed: Apr 7, 1965. 'Nitro-Chalk' applied: Apr 21. Sprayed: Apr 30. Combine harvested: Sept 14. Variety: Cappelle. Previous crops: Spring wheat 1963, potatoes 1964.

Standard errors per plot. Grain:

Whole plot: 2.85 or 8.0% (6 d.f.)
Sub plot: 3.01 or 8.5% (9 d.f.)

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65/Da/4.2

SUMMARY OF RESULTS

GRAIN

	S	P	R	Mean
	(1) and (2)			
L	40.3	36.5	37.1	38.0
H	34.4	31.7	32.5	32.8
Mean (±1.42)	37.3	34.1	34.8	35.4

Mean D.M. %: 80.0

(1) (±1.78) For use in horizontal comparisons only

(2) (±1.51) For use in interaction comparisons only

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65/Da/5.1

WINTER WHEAT

(BG 1)

Sowing dates and bulb fly, Stackyard 1965.

Design: 4 randomised blocks of 3 plots, split into 2 for covering to prevent egg-laying (unrandomised).

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

Treatments: All combinations of:-
Whole plots: 1. Sowing dates: Oct 27 (E), Nov 25 (M), Dec 22 (L).
Sub plots: 2. Not covered (O), covered with polythene sheet July to mid-September (C).

Basal applications: 280 lb (6:15:15) combine drilled, 0.8 cwt N as 'Nitro-Chalk' top-dressed in spring, 25 cwt ground chalk. Seed dressed with organo-mercury fungicide only. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 7 pints in 40 gals).

Cultivations, etc.: Ploughed: June 18, 1964. Chisel ploughed twice: Oct 13. Ground chalk applied at 25 cwt: Oct 26. 'Nitro-Chalk' applied: Apr 14, 1965. Sprayed: May 6. Combine harvested: Sept 13. Variety: Cappelle. Previous crops: Barley and Kale 1963, bare fallow 1964.

NOTE: Samples were taken from late February until mid-May to estimate numbers of plants, shoots, larvae, damaged shoots and damaged larvae. Samples were taken just before harvest and ear number, grain weight, 100 grain weights and straw weights were recorded. Counts of straws were made in samples taken after harvest.

Standard errors per plot. Grain:
Whole plot: 3.44 or 9.3% (6 d.f.)
Sub plot: 4.90 or 13.2% (9 d.f.)

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SUMMARY OF RESULTS

GRAIN

	E	M	L	Mean
	(1) and (2)			
O	38.5	36.5	30.3	35.1
C	36.3	42.4	38.7	39.2
Mean (±1.72)	37.4	39.4	34.5	37.1

(1) (±2.44) For use in horizontal comparisons only
(2) (±2.45) For use in interaction comparisons only

Mean D.M.%: 74.8

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65/Da/6.1

SPRING WHEAT

(RW 601)

Effects of CCC - Long Hoos VI 1965.

Design: 2 x 2 x 2 x 2 in 6 blocks of 8 plots plus 2 extra plots per block, each complete block being a half replicate.

Area of each plot: 0.0184. Area harvested: 0.0007.

Treatments: All combinations of:-
1. CCC* in spray at 40 gals: None (O), 2.5 lb (S).
2. Row spacing: Rows 4 (C), 8 in. (W) apart.
3. Seed rate: 180 (L), 360 lb (H).
4. Nitrogen: 0.5 (N1), 1.0 cwt (N2) N as 'Nitro-Chalk'.

In addition the experiment included 4 extra treatments (2 per block), - CWLN4, SWLN4, CWHN4, SWHN4, where N4 represents 2.0 cwt N as 'Nitro-Chalk'.

* 2-chloroethyltrimethylammonium chloride - a dwarfing compound.

NOTE: (1) A wetter was included in the CCC spray.

Basal applications: 2 cwt (0:20:20) broadcast. Weedkiller: 1.12 lb MCPA and 0.08 lb dicamba in 40 gals.

Cultivations, etc.: Ploughed: Nov 6, 1964. Basal PK compound applied: Mar 30, 1965. Seed drilled, 'Nitro-Chalk' applied: Mar 31. Weedkiller applied, CCC spray applied: May 20. Yields estimated by sampling: Sept 9. Combine harvested: Sept 19. Variety: Opal. Previous crops: Winter wheat 1963, oats 1964.

NOTE: (2) Samples were taken for growth analysis at 5 leaf stage, then 3 weeks later, and at ear emergence and then fortnightly until harvest.

Standard error per plot.
Grain: 3.41 or 11.5% (32 d.f.)

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65/Da/6.2

SUMMARY OF RESULTS

GRAIN

Excluding N4 Plots

	C	W	L	H	N1	N2	Mean
	(±0.98)						(±0.70)
O	29.9	28.9	31.1	27.8	26.4	32.5	29.4
S	30.0	28.6	30.3	28.3	25.5	33.1	29.3
		C	31.4	28.4	26.6	33.2	29.9
		W	29.9	27.6	25.2	32.4	28.8
				L	27.0	34.4	30.7
				H	24.9	31.2	28.0
Mean	(±0.70)				25.9	32.8	29.4

N4 Plots

	L	H	Mean
	(±1.97)		(±1.39)
O	34.6	30.8	32.7
S	31.1	27.2	29.2
Mean (±1.39)	32.9	29.0	30.9

Mean D.M. %: 86.9

General mean: 29.7

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65/Db/1.1

BARLEY

(RB 101 and WB 101)

Row spacing, seed rates and N - Rothamsted (R) Great Knott II and Woburn (W) Horsepool 1965.

Design: 4 randomised blocks of 8 plots, split into 3 for N.

Area of each sub plot: Great Knott II (R): 0.0051.
Area harvested: 0.0051.
Horsepool (W): 0.0045.
Area harvested: 0.0045.

Treatments: All combinations of:-
Whole plots:
1. Row spacing etc.:
   - Seed broadcast, PK** broadcast (B)
   - Seed drilled, 4 inch rows, PK broadcast (C)
   - Seed drilled, 7 inch rows, PK broadcast (W)
   - Seed drilled, 7 inch rows, with PK combine drilled (W*)
2. Seed rates: 112 lb (L), 224 lb (H).

Sub plots:
3. Nitrogen: 0.4 (N1), 0.7 (N2), 1.0 (N3) cwt N as 'Nitro-Chalk'.

** (0:20:20) to all plots - rate 224 lb.

Basal applications: Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints, in 34 gals on Great Knott II (R), in 40 gals on Horsepool (W)).

Cultivations, etc.:
Great Knott II (R): Ploughed: Nov 10 - 21, 1964. Seed sown, fertilisers applied: Mar 29, 1965. Sprayed: May 13. Combine harvested: Sept 1. Variety: Maris Badger. Previous crops: Potatoes 1963, winter wheat 1964.
Horsepool (W): Ground chalk applied at 36 cwt: Oct 14, 1964. Ploughed: Nov 18. Fertilisers applied, seed sown: Mar 15, 1965. Sprayed: May 10. Combine harvested: Sept 20. Variety: Maris Badger. Previous crops: Potatoes 1963, winter wheat 1964.

NOTE: Emergence counts were made on Apr 29, 1965 on Great Knott II (R).

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Standard errors per plot. Grain:
Great Knott II (R): Whole plot: 1.73 or 3.9% (21 d.f.)
Sub plot: 2.12 or 4.8% (48 d.f.)
Horsepool (W): Whole plot: 2.49 or 5.1% (21 d.f.)
Sub plot: 3.58 or 7.3% (48 d.f.)

SUMMARY OF RESULTS

GRAIN

ROTHAMSTED

	B	C	W	W*	Mean
			(±0.87)		(±0.43)
L	37.6	46.6	46.1	45.9	44.1
H	42.5	46.6	44.6	46.7	45.1
			(1) and (2)		(±0.38)
N1	41.6	48.0	47.9	48.9	46.6
N2	39.9	46.7	44.6	45.9	44.3
N3	38.7	45.0	43.7	44.1	42.9
Mean (±0.61)	40.1	46.6	45.4	46.3	44.6

	L	H
	(3) and (4)	
N1	46.3	46.9
N2	43.5	45.1
N3	42.4	43.3

Mean D.M. %: 74.7

(1) ±0.75 For use in vertical and interaction comparisons.
(2) ±0.87 For use in horizontal and diagonal comparisons.
(3) ±0.53 For use in vertical and interaction comparisons.
(4) ±0.61 For use in horizontal and diagonal comparisons.

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65/Db/1.3

GRAIN

WOBURN

	B	C	W	W*	Mean
		(±1.25)			(±0.62)
L	49.2	52.1	50.8	49.7	50.5
H	49.9	47.7	45.6	46.2	47.3
		(1) and (2)			(±0.63)
N1	51.0	51.3	49.9	49.0	50.3
N2	50.2	49.8	49.6	48.9	49.6
N3	47.4	48.6	45.1	46.0	46.8
Mean (±0.88)	49.5	49.9	48.2	48.0	48.9

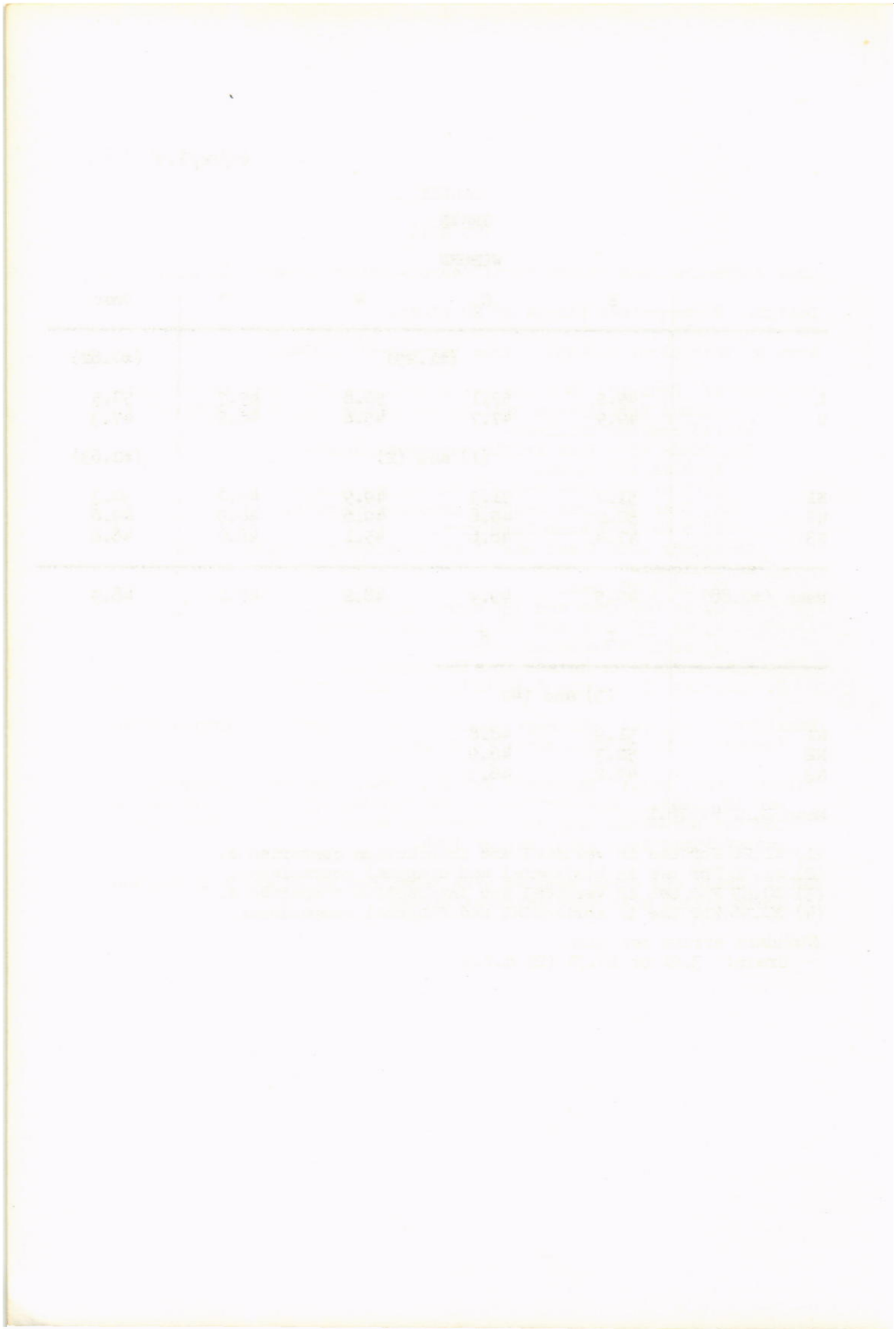
	L	H
	(3) and (4)	
N1	51.9	48.8
N2	52.3	46.9
N3	47.2	46.3

Mean D.M. %: 78.1

(1) ±1.26 For use in vertical and interaction comparisons.
(2) ±1.36 For use in horizontal and diagonal comparisons.
(3) ±0.89 For use in vertical and interaction comparisons.
(4) ±0.96 For use in horizontal and diagonal comparisons.

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65/Db/2.1

BARLEY

(WB 201)

Urea concentrations in NPK fertilisers - Woburn Great Hill S.W. 1965.

Design: 2 randomised blocks of 20 plots.

Area of each plot: 0.0055. Area harvested: 0.0042.

Treatments: None (0) (4 plots per block) and all combinations of:-

1. Compound fertilisers (all in the proportion N:P2O5:K2O of 2:1:1) combine drilled:-
   Compounds with P as triple superphosphate:-
   - P, N as 100% urea.
   - Q, N as 66% urea and 33% ammonium nitrate.
   - R, N as 33% urea and 66% ammonium nitrate.
   - S, N as 100% ammonium nitrate.

   Compounds with P and part N as monourea phosphate, remaining N as follows:-
   - T, as 100% urea.
   - U, as 66% urea and 33% ammonium nitrate.
   - V, as 33% urea and 66% ammonium nitrate.
   - W, as 100% ammonium nitrate.

   K as muriate of potash in all compounds.
2. Levels: To supply 0.5 (L1), 1.0 (L2) cwt N.

Basal applications: Manures: None. Weedkiller: dichlorprop/MCPA (Cornox RK Extra at 6 pints in 50 gals).

Cultivations, etc.: Ploughed: Nov 27, 1964. Rotary cultivated: Mar 12, 1965. Seed drilled at 140 lb: Mar 15. Sprayed: May 10. Combine harvested: Aug 25. Variety: Maris Badger. Previous crops: Sugar beet 1963, barley 1964.

NOTE: Grain and straw samples were taken for yield and N percentage. Grain yields also were taken at harvest.

Standard errors per plot.
Grain: 3.91 or 10.7% (21 d.f.)

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SUMMARY OF RESULTS

GRAIN

	P	Q	R	S	T	U	V	W	Mean
				(±2.77)					(±0.98)
L1	41.9	39.1	40.7	41.4	37.7	38.3	40.6	33.9	39.2
L2	42.0	43.5	41.6	46.3	38.0	40.5	42.3	42.9	42.2
Mean (±1.96)	42.0	41.3	41.1	43.8	37.9	39.4	41.5	38.4	40.7

Plots receiving no fertiliser: 19.6 (±1.38)

General mean: 36.5

Mean D.M. %: 75.5

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65/Dc/1

WINTER BEANS

(RBe 101)

Row spacing, seed rates, methods of fertiliser application and irrigation - Long Hoos V 1965.

Design: A single replicate of 4 x 2 x 2 x 2 x 2 in 8 blocks of 8 plots. Irrigation on one group of 4 blocks.

Area of each plot: 0.0172.

Treatments: All combinations of:-

Blocks: 1. Irrigation: None, 1.3 ins. water.

Plots: 2. Row spacing: 10.5 ins. (C), 21 ins. (W).
3. Seed rates: 275 lb (L), 412 lb (H).
4. Fertiliser rates: 400 (F1), 560 (F2) lb compound 0:20:20, 500 (N1), 700 (N2) lb 6:15:15.
5. Methods of fertiliser application: Broadcast (B), placed (P).

Basal applications: Manures: None. Simazine at 0.5 lb in 40 gals on 2 occasions.

Cultivations, etc.: Ploughed: Oct 15, 1964. Seed drilled, fertilisers applied: Nov 2. Sprayed: Nov 6, 1964 and Mar 15, 1965. Irrigated: June 2. Combine harvested: Sept 28. Variety: Garton's Pedigree. Previous crops: Winter and spring wheat 1963, barley 1964.

NOTE: The crop was severely attacked by Black Fly (Aphis fabae) and by Chocolate Spot (Botrytis cinerea). The experiment was therefore abandoned and no yields were taken.

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65/Dd/1

POTATOES

(RP 101)

Effects of DSA (dimethylamino-succinamic acid - a dwarfing compound) - Highfield odds and ends III 1965.

Design: A single replicate of 3 x 6 in 6 blocks of 3 plots each.

Area of each plot: 0.0096. Area harvested: 0.0011.

Treatments: All combinations of:-
Blocks: 1. Seed tuber size: 45-50, 50-60, 60-70, 70-80, 80-90, 90 and more grams. Setts hand planted at 15 inches apart within the row.
Plots: 2. DSA: None (S0), 47 oz in 290 gals (S1), 235 oz in 290 gals (S5), applied twice June 17 and July 1.

Basal applications: 7 cwt (17:11:22). Fungicide: Mancozeb at 1.2 lb in 37 gals on 4 occasions. Weedkiller: Linuron at 2lb and paraquat at 0.75 lb ion in 40 gals.

Cultivations, etc.: Ploughed: Oct 16, 1964. Basal NPK applied: Apr 14, 1965. Rotary cultivated: Apr 23. Potatoes planted: Apr 26. Sprayed, weedkiller: June 17, fungicide: June 30, July 27, Aug 9, Aug 13. Lifted: Oct 25. Variety: Majestic. Previous crops: Oats 1963, barley 1964.

NOTE: The crop was sampled on 4 occasions for leaf area, dry weights and tuber yield. ✓

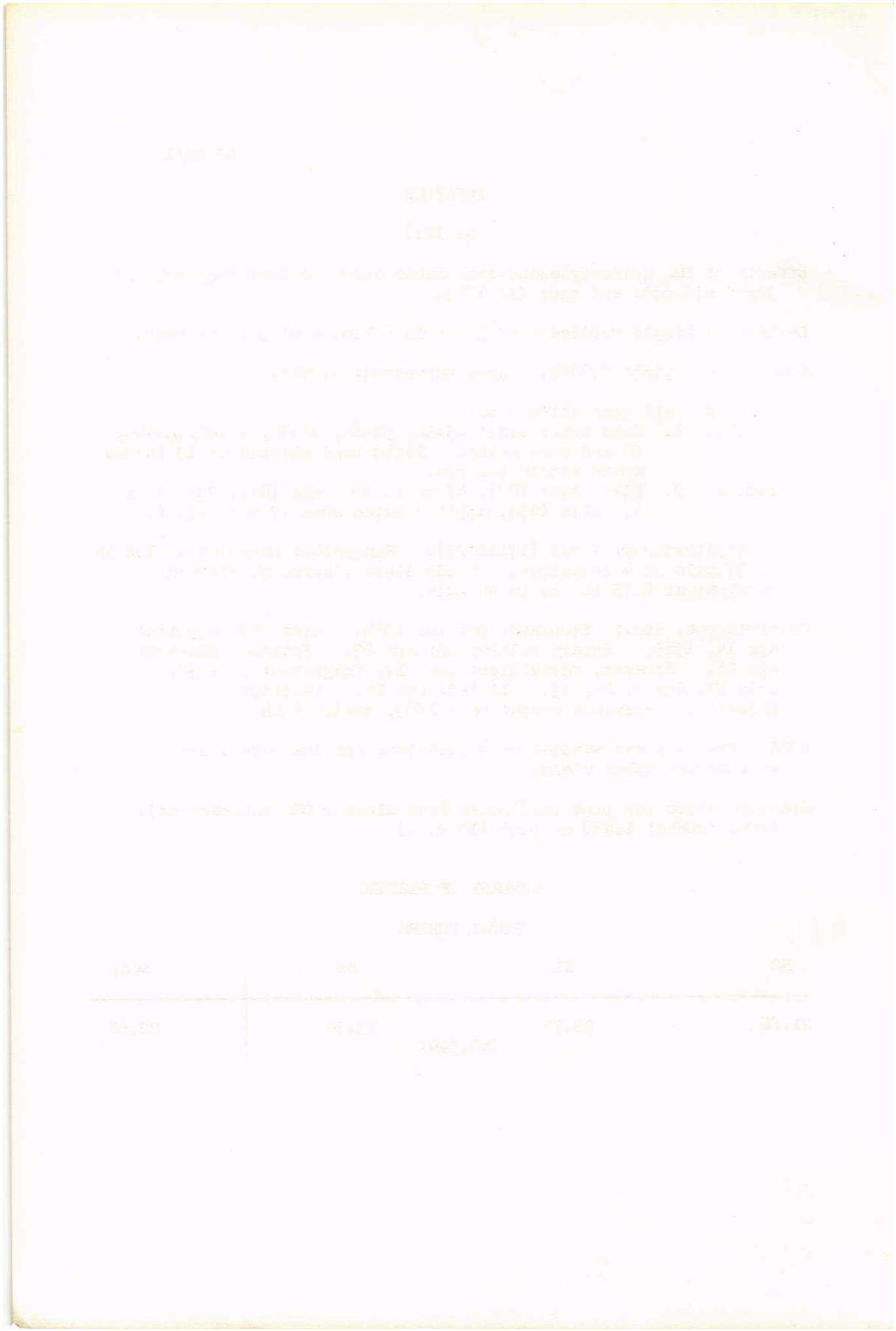
Standard error per plot (estimated from Block x DSA interaction). Total tubers: 1.468 or 6.5% (10 d.f.)

SUMMARY OF RESULTS

TOTAL TUBERS

S0	S1	S5	Mean
21.88	22.77 (±0.599)	23.34	22.66

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65/Dd/2.1

POTATOES

(RP 201)

Effects of gaps - Great Knott I 1965.

Design: 4 randomised blocks of 15 plots each.

Area of each plot: 0.0071. Area harvested: 0.0033.

Treatments: All combinations of:-
1. Time of gapping: At emergence on May 20 (E), just after flowering on July 1 (F), just before harvest on Sept 10 (H).
2. Amount of gapping: None (G0), 4 (G4), 8 (G8), 12 (G12), 16% (G16) of plants removed.

Basal applications: 8 tons dung, 7 cwt (17:11:22).
Fungicide: Mancozeb at 1.2 lb in 37 gals on 4 occasions.

Cultivations, etc.: Dung applied and ploughed in: Nov 20, 1964. Basal NPK applied: Apr 7, 1965. All plots rotary cultivated, potatoes planted: Apr 13. Earthed up: June 14. Sprayed: June 28, July 21, July 27, Aug 9. Sprayed with undiluted BOV at 15 gals: Sept 2. Lifted: Oct 18. Variety: Majestic. Previous crops: Winter and spring wheat 1963, barley 1964.

Standard error per plot.
Total tubers: 2.091 or 10.8% (44 d.f.)

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65/Dd/2.2

SUMMARY OF RESULTS

	G0	G4	G8	G12	G16	Mean
			TOTAL TUBERS			
			(±1.046)			(±0.523)
E		20.75	19.26	20.17	20.81	20.25
F		18.72	20.22	17.64	18.85	18.86
H		19.33	19.16	17.41	17.10	18.25
Mean (±0.604)	20.05	19.60	19.55	18.41	18.92	19.30
			% WARE			
E		96.1	96.3	96.4	96.5	96.3
F		95.9	96.4	95.4	95.7	95.8
H		96.4	96.4	95.7	95.8	96.1
Mean	95.9	96.2	96.4	95.9	96.0	96.1

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65/Dd/3.1

POTATOES

(RP 301)

Effects of skin-spot (Oospora pustulans) - Fosters odds and ends I 1965.

Design: 5 randomised blocks of 2 plots split into 4 for infection.

Area of each plot: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Varieties: King Edward (E), Majestic (M).
Sub plots: 2. Infection of seed (Oospora pustulans): Clean (A), moderate (B), severe (C), inoculated (D).

Basal applications: 7 cwt (17:11:22). Fungicide: Mancozeb at 1.2 lb in 37 gals on 4 occasions.

Cultivations, etc.: Ploughed: Oct 12, 1964. Basal NPK applied, all plots rotary cultivated, potatoes planted: Apr 13, 1965. Earthed up: June 14. Sprayed: June 29, July 14, July 26, Aug 9. Sprayed with undiluted BCV at 15 gals: Sept 2. Lifted: Oct 18. Previous crops: Italian Ryegrass 1963, barley 1964.

NOTE: Emergence counts were made on May 24 and June 9. Samples of tubers were taken at lifting to estimate the number of infected buds.

Standard errors per plot. Total tubers:
Whole plot: 0.678 or 3.8% (4 d.f.)
Sub plot: 2.218 or 12.4% (24 d.f.)

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65/Dd/3.2

SUMMARY OF RESULTS

	A	B	C	D	Mean
	TOTAL TUBERS				
	(1) and (2)				(±0.303)
E	19.60	19.06	13.65	19.05	17.84
M	19.37	20.19	15.79	16.28	17.91
Mean (±0.701)	19.49	19.63	14.72	17.67	17.88
	% WARE				
E	95.8	95.4	95.7	96.2	95.8
M	97.0	97.3	97.3	97.9	97.4
Mean	96.4	96.3	96.5	97.1	96.6

(1) (±0.911) For use in vertical and diagonal comparisons
(2) (±0.992) For use in horizontal and interaction comparisons

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65/Dd/4.1

POTATOES

(RP 401)

Effects of stem-canker (Rhizoctonia solani) - Fosters odds and ends II 1965.

Design: 5 blocks of 2 plots split into 4 for infection.

Area of each plot: 0.0033.

Treatments: All combinations of:-
Whole plots: 1. Varieties: King Edward (E), Majestic (M).
Sub plots: 2. Infection of seed with Rhizoctonia solani: Clean (A), moderate (B), severe (C), inoculated (D).

Basal applications: 7 cwt (17:11:22). Fungicide: Mancozeb at 1.2 lb in 37 gals on 4 occasions.

Cultivations, etc.: Ploughed: Oct 16 - Nov 24, 1964. Basal NPK applied, all plots rotary cultivated, potatoes planted: Apr 13, 1965. Earthed up: June 14. Sprayed: June 28, July 14, July 26, Aug 9. Sprayed with undiluted BOV at 15 gals: Sept 2. Lifted: Oct 19. Previous crops: Alsike and white clover 1963, barley 1964.

NOTE: Emergence counts were made on May 29 and June 9, and a count of the number of plants infected with Corticium solani on July 9. Tubers were examined macroscopically at harvest for surface infection, and the number of buds infected was estimated.

Standard errors per plot. Total tubers:
Whole plot: 0.896 or 5.1% (4 d.f.)
Sub plot: 1.446 or 8.2% (24 d.f.)

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65/Dd/4.2

SUMMARY OF RESULTS

	A	B	C	D	Mean
	TOTAL TUBERS				
	(1) and (2)				(±0.401)
E	18.89	17.99	17.32	19.93	18.53
M	18.04	18.23	18.02	12.91	16.80
Mean (±0.457)	18.46	18.11	17.67	16.42	17.66
	% WARE				
E	95.3	95.0	93.0	96.3	94.9
M	97.4	97.6	97.2	97.2	97.4
Mean	96.4	96.3	95.1	96.8	96.1

(1) (±0.689) For use in vertical and diagonal comparisons
(2) (±0.647) For use in horizonal and interaction comparisons

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65/Dd/5.1

POTATOES

(RP 501)

Times of burning off haulm - Great Knott I 1965.

Design: 4 randomised blocks of 14 plots (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 (O)	None (O)	
Early 4 (E+)	None (O)	
Early 3 (E)	(A)	
Early 4 (E+)	(A)	
Late 3 (L)	(A)	
Early 3 (E)	(B)	
Early 4 (E+)	(B)	
Late 3 (L)	(B)	
Late 4 (L+)	(B)	(see below)
Early 4 (E+)	(C)	
Early 4 (E+) (Sprayed with insecticide***) (I)	(B)	

Each block also contained 3 plots for sampling (no yields). Of these 12 plots 6 were treated as OO and 6 as E+O. The early burning off (A) took place when the mean destruction by blight of the remaining tops on the E+O yield plots (50% was already dead) was 4.7%, the second burning off at 15% (50% senility), the third at 29% (55% senility). The first fungicide sprays were applied before the Ministry of Agriculture's blight warning.

NOTE: The final fungicide spray was not applied because blight on the haulm had already reached the stage for acid destruction, therefore L + B = LB.

* 1.2 lb mancozeb in 34 gals.
** With undiluted BOV at 15 gals.
*** Menazon (Saphicol at 0.25 lb in 34 gals).

Basal applications: 8 tons dung, 7 cwt (17:11:22).

Cultivations, etc.: Dung applied, all plots ploughed: Nov 20, 1964. Fertiliser applied: Apr 7, 1965. Rotary cultivated, potatoes machine planted: Apr 8. Earthed up: June 14. First spraying with mancozeb (E,E+): June 28. Menazon spray applied and second spraying with mancozeb (E,E+,L,L+): July 14. Third spraying with

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mancozeb (E,E+,L,L+): July 26, fourth (E+,L,L+): Aug 9. A plots sprayed with BOV: Aug 13, B plots: Aug 19, C plots: Sept 2. Lifted: Oct 13. Variety: King Edward. Previous crops: Spring wheat 1963, barley 1964.

NOTE: Destruction of foliage was assessed at weekly intervals from the blight outbreak until total destruction. Periodic samples were taken from the sample plots for weights of tubers and blight assessment in tubers.

Standard error per plot.
Total tubers: 1.226 or 7.0% (31 d.f.)

SUMMARY OF RESULTS

		Total tubers	% ware
		(±0.613)	
O	O	16.04	94.8
E+	O	19.57	96.6
E	A	16.11	94.8
E+	A	16.55	96.1
L	A	16.90	95.0
E	B	17.39	95.5
E+	B	17.42	95.9
L	B	17.20 (±0.434)	95.3
E+	C	18.51	96.0
E+I	B	18.49	95.3
Mean		17.40	95.5

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65/Dd/6.1

POTATOES

(RP 701)

Control of blight (Phytophthora infestans) by copper and tin fungicides - Long Hoos III 1965.

Design: 6 x 6 Latin square.

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)
Fentin acetate at 0.1 lb plus maneb at 0.03 lb (3)
Fentin acetate at 0.3 lb plus maneb at 0.1 lb (4)
Fentin acetate at 0.1 lb plus maneb at 0.03 lb plus 10 lb wax (5)
All sprays applied twice in 100 gals.

Basal applications: 7 cwt (17:11:22). Weedkillers: 2 lb linuron plus 0.75 lb paraquat in 40 gals. Insecticide: 1.5 lb phorate with seed.

Cultivations, etc.: Ploughed: Nov 23, 1964. Basal NPK applied: Apr 5, 1965. Rotary cultivated, potatoes machine planted: Apr 21. Sprayed, weedkiller: May 14, treatment fungicides: July 9 and 26. Sprayed with undiluted BCV at 15 gals: Sept 2. Lifted: Oct 21. Variety: King Edward. Previous crops: Potatoes 1963, winter wheat and barley 1964.

Standard error per plot.
Total tubers: 1.160 or 7.8% (20 d.f.)

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65/Dd/6.2

SUMMARY OF RESULTS

0	1	2	3	4	5	Mean
			TOTAL TUBERS			
			(±0.474)			
13.61	14.14	15.55	14.46	15.83	15.16	14.79
			% WARE			
94.2	94.4	94.4	94.9	95.5	95.1	94.8

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65/Dd/7.1

POTATOES

(RP 801)

Soil fungicides and blight, Long Hoos III 1965.

Design: 6 randomised blocks of 9 plots with cultivation treatment by blocks.

Area of each plot: 0.0043. Area harvested: 0.0021.

Treatments:
To blocks:
1. Earthing up: Rounded (R), pointed (P) ridges.

To plots: None (O) and all combinations of:-
2. Fungicides: Copper oxychloride at 2.5 lb Cu (C), triphenyltin at 0.66 lb (T).
3. Form and time of application: Granular applied after planting (G), soil spray applied by hand sprayer at 50% crop emergence (S1) or at first blight damage (S2), foliar spray at first blight damage (F).

Basal applications: 7 cwt (17:11:22). Weedkillers: Paraquat at 0.75 lb ion plus linuron at 2 lb in 40 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals on 2 occasions. Insecticide: 1.5 lb phorate with seed.

Cultivations, etc.: Ploughed: Nov 23, 1964. Basal NPK applied: Apr 5, 1965. Rotary cultivated, potatoes machine planted (15 in. spacing): Apr 21. CG treatment applied: Apr 26. TG treatment applied: Apr 28. P treatments earthed up: May 13. Sprayed, weedkiller: May 14. CS1 and TS1 treatments applied: May 21. Sprayed, fungicide: June 30 and July 28. CS2, TS2, CF and TF treatments applied: July 29. Sprayed with undiluted BCV at 15 gals: Sept 2. Lifted: Oct 21. Variety: King Edward (chitted seed). Previous crops: Potatoes and winter wheat 1963, winter wheat 1964.

NOTE: Tubers were examined for blight infection at harvest.

Standard error per plot.
Total tubers: 1.446 or 8.6% (32 d.f.)

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SUMMARY OF RESULTS

TOTAL TUBERS

	O	OG	OS1	OS2	OF	TG	TS1	TS2	TF	Mean
					(±0.835)*					
R	17.90	16.41	15.27	16.64	17.42	16.05	17.63	17.00	18.23	16.95
P	16.24	17.52	15.53	16.41	16.66	17.82	17.47	17.15	15.17	16.66
Mean (±0.590)	17.07	16.96	15.40	16.53	17.04	16.94	17.55	17.07	16.70	16.81

* For use in horizontal and interaction comparisons only.

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65/Dd/8.1

POTATOES

Soil fungicides, Long Hoos III 1965.

Design: 4 randomised blocks of 11 plots.

Area of each plot: 0.0011.

Treatments: None*(0) and all combinations of:-

1. Fungicides:
   - Triphenyltin acetate (A)
   - Tributyltin acetate (B)
   - Bis(triphenyltin)sulphide (C)
   - Triphenyltin chloride (D)

   at 0.175 lb metallic Sn in 210 lb kaolin, applied to the soil and lightly forked in.
   - Tetrachloro-iso-phthalonitrile wettable powder (E)

   sprayed into soil at 15 lb in 500 gals.
2. Times of application: June 28 - 30 (1), at first foliage blight (July 27 - 29) (2).

* 210 lb kaolin dust was applied on June 28.

Basal applications: 7 cwt (17:11:22). Weedkiller: 2 lb linuron plus 0.75 lb ion paraquat in 40 gals. Fungicide: Mancozeb at 1.2 lb in 37 gals. Insecticide: 1.5 lb phorate with seed.

Cultivations, etc.: Ploughed: Nov 23, 1964. Basal NPK applied: Apr 5, 1965. Rotary cultivated, potatoes machine planted: Apr 21. Sprayed (weedkiller): May 14, fungicide: June 30. Sprayed with undiluted BCV at 15 gals: Sept 2. Harvested: Aug 31. Variety: King Edward. Previous crops: Winter wheat 1963 and 1964.

NOTE: Tubers were examined at harvest for blight infection.

Standard error per plot.
Total tubers: 1.555 or 10.6% (30 d.f.)

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65/Dd/8.2

SUMMARY OF RESULTS

TOTAL TUBERS

O	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	Mean
					(±0.778)						
14.69	14.04	14.77	15.76	14.56	14.55	13.65	14.92	15.81	15.43	13.54	14.70

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65/Dd/9.1

POTATOES

(WP 101)

Control of tuber blight (Phytophthora infestans) by fungicide sprays and haulm destruction - Woburn Workhouse Field 1965.

Design: 6 x 6 Latin square.

Area of each plot: 0.0425. Area harvested: 0.0141.

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

* 1.5 lb fungicide, containing 80% mancozeb, in 34 gals.
** Reglone at 4 pints in 34 gals.

Basal applications: 7 cwt (17:11:22).

Cultivations, etc.: Ploughed: Jan 19 - 26, 1965. Basal dressing applied: Apr 13. Rotary cultivated, potatoes planted: Apr 15. Earthed up: June 14. First spraying with mancozeb (E and E+ plots): July 2, second (E, E+ and L): July 15, third (E, E+ and L): July 30, final (E+ and L): Aug 13. Appropriate plots sprayed with diquat: Aug 27. Haulm destroyed mechanically: Oct 4. Lifted: Oct 13. Variety: King Edward. Previous crops: Grass 1963 and 1964.

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

Standard error per plot.
Total tubers: 1.787 or 10.8% (15 d.f.)

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65/Dd/9.2

SUMMARY OF RESULTS

O	E	E+	L	Mean
		TOTAL TUBERS		
		(±0.730)		
13.13	18.10	17.71	17.19	16.53
		% WARE		
95.1	96.2	96.9	97.1	96.3

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65/De/1.1

CARROTS

(WCt 101)

The effects of systemic insecticides on yield through control of motley dwarf virus - Woburn Butt Close 1965.

Design: 4 x 4 Latin square.

Area of each plot: 0.0135. Area harvested: 0.0035.

Treatments: All combinations of:-
1. Menazon granules placed: None (0), 0.8 lb menazon (G).
2. Menazon spray: None (0), sprayed 4 times with menazon (Saphicol at 0.5 pints in 37 gals) (S).

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

Cultivations, etc.: Ploughed: Nov 24, 1964. Basal NPK applied, seed drilled at 3.5 lb, menazon granules placed: Apr 13, 1965. Menazon sprays applied: June 3, June 21, July 3, July 16. Lifted: Aug 25. Variety: New Model Red Cored. Previous crops: Winter wheat 1963, barley 1964.

NOTE: Weekly sticky-trap records were taken and periodical aphid counts were made on plots. Estimates of virus infection and yield from samples were made early in August. Root-top ratios were estimated.

Standard errors per plot.

Marketable roots:	1.822 or 7.6% (6 d.f.)
Tops from marketable roots:	0.712 or 9.8% (6 d.f.)

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65/De/1.2

SUMMARY OF RESULTS

	O	S	Mean
	MARKETABLE ROOTS		
	(±0.911)		(±0.644)
O	20.91	26.17	23.54
G	23.56	24.78	24.17
Mean (±0.644)	22.24	25.48	23.86
	TOPS FROM MARKETABLE ROOTS		
	(±0.356)		(±0.252)
O	6.00	8.06	7.03
G	7.42	7.55	7.49
Mean (±0.252)	6.71	7.81	7.26

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65/Df/1.1

KALE

(WK/E)

Urea concentrations in NPK fertilisers - Woburn Butt Close 1965.

Design: 3 randomised blocks of 18 plots.

Area of each plot: 0.0019. Area harvested: 0.0011.

Treatments: None (O) (2 plots per block) and all combinations of:-

1. Compound fertilisers (all in the proportion N: P2O5: K2O of 2:1:1):-

   Compounds with P as triple superphosphate:-

   N 100% urea (P)
   N 66% urea and 33% ammonium nitrate (Q)
   N 33% urea and 66% ammonium nitrate (R)
   N 100% ammonium nitrate (S)

   Compounds with P and part N as monourea phosphate, remaining N as follows:-

   100% urea (T)
   66% urea and 33% ammonium nitrate (U)
   33% urea and 66% ammonium nitrate (V)
   100% ammonium nitrate (W)

   K as muriate of potash in all compounds.

2. Levels: To supply 1.25 (L1), 2.50 (L2) cwt N.

Basal applications: Manures: None. Insecticide: Menazon and BHC (Abol X at 10 fluid oz in 40 gals).

Cultivations, etc.: Ploughed: Nov 24, 1964. Rotary cultivated 4 times (to kill twitch), fertilisers broadcast, seed drilled at 10 lb: May 6, 1965. Sprayed: July 8. Harvested: Oct 15. Variety: Thousand Head. Previous crops: Winter wheat 1963, carrots 1964.

NOTE: Soil samples were taken for determination of mineralisable N. Crop samples were taken for germination count, yield and N percentage. Samples were taken at harvest for yield and N percentage.

Standard error per plot.
Fresh weight: 1.809 or 8.2% (34 d.f.)

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SUMMARY OF RESULTS

FRESH WEIGHT

	O	P	Q	R	S	T	U	V	W	Mean
					(±1.044)					(±0.369)
L1		20.66	21.34	20.05	21.20	21.54	19.78	21.81	20.86	20.90
L2		25.19	25.52	27.21	26.20	25.79	25.52	26.00	26.33	25.97
Mean (±0.738)	10.40	22.92	23.43	23.63	23.70	23.67	22.65	23.90	23.60	21.99*

* General mean.

65/DF/1.2

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METEOROLOGICAL RECORDS 1965 - 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	77 (+24.5)	37.2 (0.0)	33.0	38.0	43.2	22	2.31 (-0.21)	20	2.24	6.7
Feb	29 (-39.7)	36.2 (-2.0)	32.4	37.6	41.7	19	0.77 (-1.14)	13	0.27	4.5
Mar	129 (+13.1)	41.0 (-0.3)	34.8	40.0	41.3	16	2.12 (+0.20)	17	1.09	4.6
Apr	114 (-40.0)	46.1 (+0.2)	40.0	46.7	44.6	12	2.03 (+0.09)	17	0.08	5.3
May	164 (-32.5)	52.5 (+0.5)	44.6	53.0	48.1	4	2.06 (-0.05)	16	0.15	4.7
June	162 (-40.9)	57.1 (-0.2)	50.2	57.6	51.8	0	2.48 (+0.27)	16	0.57	3.9
July	91 (-102.5)	56.5 (-4.2)	51.1	58.9	54.7	0	4.16 (+1.63)	19	1.77	3.5
Aug	168 (-13.9)	58.5 (-1.6)	52.6	59.8	56.4	0	2.10 (-0.49)	13	0.50	3.2
Sept	121 (-24.1)	53.9 (-2.2)	48.9	56.3	55.8	0	4.02 (+1.64)	19	2.08	3.4
Oct	125 (+21.0)	51.1 (+2.0)	47.3	52.4	54.1	2	0.89 (-2.06)	13	0.10	3.5
Nov	83 (+22.6)	39.5 (-3.0)	36.0	43.9	50.0	16	2.76 (-0.04)	19	2.28	6.1
Dec	53 (+7.8)	39.1 (+0.5)	36.7	40.4	45.2	22	4.73 (+2.13)	23	4.26	5.7
Year	1316 (-204.6)	47.4 (-0.9)	42.3	48.7	48.9	113	30.43 (+1.97)	205	15.39	4.6

(1) Mean of maximum and minimum.
(2) Number of nights grass min. was below 32°F.
(3) Number of days rainfall was 0.01 in. or more.
(4) At 2 metres above ground level.

65/E/1.1

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METEOROLOGICAL RECORDS 1965 - WOBURN

(Departure from long period means in brackets)

Month	Total sun-shine: hours	Mean temperature: °F Air(1)	Mean temperature: °F In ground 1 ft.	Grass minimum °F	Total rainfall: in 8 in. gauge	Rain(2) days
January	83 (+31.4)	37.9 (+0.1)	38.2	28.4	2.14 (0.0)	22
February	26 (-40.9)	36.4 (-1.8)	37.6	27.6	0.55 (-1.02)	14
March	130 (+12.9)	41.5 (-0.4)	40.3	30.3	2.10 (+0.42)	16
April	120 (-22.8)	46.2 (-0.3)	47.0	33.2	1.88 (+0.05)	18
May	164 (-23.5)	52.2 (+0.1)	53.8	42.0	2.00 (-0.08)	18
June	180 (-15.5)	57.1 (-0.4)	59.2	47.1	2.12 (+0.29)	13
July	96 (-87.1)	56.6 (-4.4)	60.1	47.3	3.19 (+0.86)	17
August	167 (-9.3)	58.4 (-2.0)	61.1	45.7	2.40 (-0.03)	12
September	122 (-16.6)	54.1 (-2.4)	57.0	43.2	4.67 (+2.55)	17
October	111 (+7.2)	50.6 (+0.9)	52.9	38.9	0.61 (-1.59)	11
November	79 (+19.2)	41.8 (-1.3)	44.3	31.0	2.32 (-0.10)	23
December	58 (+13.4)	39.9 (+0.9)	40.8	29.6	4.05 (+1.89)	21
Year*	1336 (-131.6)	47.7 (-0.9)	49.4	37.0	28.03 (+3.24)	202

(1) Mean of maximum and minimum.
(2) Number of days rainfall was 0.01 inches or more.
* Mean or total

65/E/1.2

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