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# Yields of the Field Experiments 1964

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## Classical Experiments

### Rothamsted Research

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64/A/1.1

WHEAT - BROADBALK 1964

(BK)

The 121st year

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

All sections except VA are now sprayed annually with weedkillers.

Cultivations, etc.:

CROPPED SECTIONS. Ground chalk applied to section VA (first half of 5 ton dressing): Sept 19, 1963. Ground chalk applied to plot 19, Section IV at 5 tons: Sept 23. Normal annual dressing of ground chalk applied to plots: Sept 23 and Oct 1. Dung applied: Sept 24. Ploughed: Sept 25 - Oct 2. Ground chalk applied to Section VA (remainder of 5 ton dressing): Oct 11. Autumn fertilisers applied: Oct 15. Seed drilled at 3 bushels: Nov 30. Spring fertilisers applied: Apr 13, 1964. Second dressing of nitrate of soda applied to plot 16: Apr 17. All sections except VA sprayed with dicamba/MCPA ('Banlene' at 4 pints in 40 gals): May 7. Combine harvested: Aug 27. Variety: Squarehead's Master 13/4 (Rothamsted seed from Broadbalk).  
FALLOW SECTION. (IV) Ploughed: Sept 25 - Oct 2, 1963, May 4, 1964, July 9.

BROADBALK WILDERNESS. Cultivations etc.:

Ungrazed meadow (north): Shrubs grubbed out: Dec 18 - 31, 1963.  
Grazed meadow (centre): Grazed by sheep: Apr 28 - May 7, 1964, June 4 - 9, July 8 - 13, Aug 14 - 18. Grass topped: May 8, June 13, July 13, Aug 18, Nov 12.

64/A/1.2

SUMMARY OF RESULTS

GRAIN

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

Mean D.M. %: 87.4

64/A/1.3

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

Mean D.M. %: 91.0





64/A/2.1

BARLEY - HOOSFIELD 1964

(HB)

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

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

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

64/A/2.2

SUMMARY OF RESULTS

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

64/A/3

WHEAT AFTER FALLOW - HOOSFIELD 1964

(HWF)

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

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

Cultivations, etc.:

Cropped plots. Ploughed: Sept 24, 1963. Seed drilled at  
3 bushels: Oct 16. Combine harvested: Aug 28, 1964.

Fallowed plots. Ploughed 3 times: Sept 24, 1963,  
May 30, 1964, July 27.

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

SUMMARY OF RESULTS

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

Mean D.M. %: Grain 83.0 Straw 91.2



TABLE

WATER TABLE - WASHINGTON STATE

(1957)

For a full description of the symbols used in this table, see the Introduction, page 1.

Area of each plot: Department's Station 1716 - 0.0500; National Forest - 0.0500. Area enclosed: 0.0500.

Investigation made: Department's Station 1716 - 0.0500. National Forest - 0.0500. Area enclosed: 0.0500. Investigation made: Department's Station 1716 - 0.0500. National Forest - 0.0500. Area enclosed: 0.0500.

NOTE: Symbols of stars under and outside of symbols (Department's Station 1716 and National Forest) were used.

TABLE OF RESULTS

Year	Department's Station 1716			National Forest
	1	2	3	
1957	11.0	10.5	10.0	11.0
1958	10.5	10.0	9.5	10.5
1959	10.0	9.5	9.0	10.0
1960	9.5	9.0	8.5	9.5
1961	9.0	8.5	8.0	9.0
1962	8.5	8.0	7.5	8.5
1963	8.0	7.5	7.0	8.0
1964	7.5	7.0	6.5	7.5
1965	7.0	6.5	6.0	7.0
1966	6.5	6.0	5.5	6.5
1967	6.0	5.5	5.0	6.0
1968	5.5	5.0	4.5	5.5
1969	5.0	4.5	4.0	5.0
1970	4.5	4.0	3.5	4.5
1971	4.0	3.5	3.0	4.0
1972	3.5	3.0	2.5	3.5
1973	3.0	2.5	2.0	3.0
1974	2.5	2.0	1.5	2.5
1975	2.0	1.5	1.0	2.0
1976	1.5	1.0	0.5	1.5
1977	1.0	0.5	0.0	1.0
1978	0.5	0.0	-0.5	0.5
1979	0.0	-0.5	-1.0	0.0
1980	-0.5	-1.0	-1.5	-0.5
1981	-1.0	-1.5	-2.0	-1.0
1982	-1.5	-2.0	-2.5	-1.5
1983	-2.0	-2.5	-3.0	-2.0
1984	-2.5	-3.0	-3.5	-2.5
1985	-3.0	-3.5	-4.0	-3.0
1986	-3.5	-4.0	-4.5	-3.5
1987	-4.0	-4.5	-5.0	-4.0
1988	-4.5	-5.0	-5.5	-4.5
1989	-5.0	-5.5	-6.0	-5.0
1990	-5.5	-6.0	-6.5	-5.5
1991	-6.0	-6.5	-7.0	-6.0
1992	-6.5	-7.0	-7.5	-6.5
1993	-7.0	-7.5	-8.0	-7.0
1994	-7.5	-8.0	-8.5	-7.5
1995	-8.0	-8.5	-9.0	-8.0
1996	-8.5	-9.0	-9.5	-8.5
1997	-9.0	-9.5	-10.0	-9.0
1998	-9.5	-10.0	-10.5	-9.5
1999	-10.0	-10.5	-11.0	-10.0
2000	-10.5	-11.0	-11.5	-10.5
2001	-11.0	-11.5	-12.0	-11.0
2002	-11.5	-12.0	-12.5	-11.5
2003	-12.0	-12.5	-13.0	-12.0
2004	-12.5	-13.0	-13.5	-12.5
2005	-13.0	-13.5	-14.0	-13.0
2006	-13.5	-14.0	-14.5	-13.5
2007	-14.0	-14.5	-15.0	-14.0
2008	-14.5	-15.0	-15.5	-14.5
2009	-15.0	-15.5	-16.0	-15.0
2010	-15.5	-16.0	-16.5	-15.5
2011	-16.0	-16.5	-17.0	-16.0
2012	-16.5	-17.0	-17.5	-16.5
2013	-17.0	-17.5	-18.0	-17.0
2014	-17.5	-18.0	-18.5	-17.5
2015	-18.0	-18.5	-19.0	-18.0
2016	-18.5	-19.0	-19.5	-18.5
2017	-19.0	-19.5	-20.0	-19.0
2018	-19.5	-20.0	-20.5	-19.5
2019	-20.0	-20.5	-21.0	-20.0
2020	-20.5	-21.0	-21.5	-20.5

64/A/4.1

GRASS - AGDELL 1964

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

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

The areas in grass and fallow are now each divided into 8 sub plots, which receive PK treatments:-

P205: 0 (P0), 4.0 (P1), 8.0 (P2), 16.0 (P4) cwt with basal K

K20: 0 (K0), 2.5 (K1), 5.0 (K2), 10.0 (K4) cwt with basal P

All P205 as triple superphosphate, all K20 as muriate of potash.

Basal dressings: To P plots: as treatment K4.

To K plots: as treatment P4.

The grass areas also received 0.8 cwt N as 'Nitro-Chalk' in seedbed.

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

Cultivations, etc.: Ploughed: Nov 27 - Dec 2, 1963. PK fertilisers applied: Mar 11, 1964.

Grass: Old grass. Sprayed with dalapon at 11 lb a.e. in 40 gals: Oct 17, 1963. Seed sown at 30 lb, seedbed 'Nitro-Chalk'

applied: May 8, 1964. Sprayed with 2,4-D butoxyethylester at 0.44 lb a.e. in 40 gals: June 10. Cut for silage: Aug 20.

Fallow: Rotary cultivated: July 27, 1964.

64/A/4.2

SUMMARY OF RESULTS

1ST AND ONLY CUT: DRY MATTER

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

Mean D.M. %: 32.1

64/A/5.1

MANGOLDS AND POTATOES - BARNFIELD 1964

(BN)

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

In 1964 the rate of application of P2O5 was increased to 122.5 lb per acre, thus permitting the use of compound 0:14:28 on strips 2, 4 and 6. Granular superphosphate was applied to strips 5 and 7 (at 645 lb per acre, supplying 122.5 lb P2O5). Potash, sodium and magnesium were applied normally.

Cultivations, etc.: Dung applied: Dec 19, 1963. Ploughed: Jan 17 - Feb 5, 1964. Mineral fertilisers applied to strips: May 13.

Mangolds: N fertilisers applied: May 14, 1964. Seed drilled at 9 lb: May 15. Singled: June 16 - July 2. Sprayed with menazon at 0.38 lb in 35 gals: July 23. Lifted: Oct 8.

Potatoes: N fertilisers applied, all plots rotary cultivated: May 14, 1964. Rotary cultivated 2nd time, potatoes machine planted: May 15. Earthed up: June 29. Sprayed twice with mancozeb at 1.2 lb in 35 gals: July 1 and Aug 6. Haulm destroyed mechanically: Sept 22. Lifted: Sept 29.

Treatment symbols:

		N cwt per acre
NO	=	None
N1	=	0.6
N2	=	1.2
N3	=	1.8



64/A/5.2

SUMMARY OF RESULTS

MANGOLDS, ROOTS

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

64/A/5.3

MANGOLDS, LEAVES

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

64/A/5.4

MANGOLDS, PLANT NUMBER

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



64/A/5.5

POTATOES, TOTAL TUBERS

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



64/A/5.6

POTATOES % WARE

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

64/A/6

HAY - THE PARK GRASS PLOTS 1964

(PG)

The 109th year

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

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

SUMMARY OF RESULTS

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

\*Heavy liming. +Light liming.

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

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

NO. 1 - THE PARK GRASS FIELD 1904

(16)

The 1904 year

The history, treatment etc. see "Notes" 1904.

Observations etc. Ground water applied for 10 - 100 ft. 1904.  
 Ground water applied for 10 - 100 ft. 1904.  
 applied for drainage for 10 - 100 ft. 1904.  
 The water level in the well.

STATEMENT OF RESULTS

NO. 1 - THE PARK GRASS FIELD

Date	1904		1905		Remarks
	Area	Yield	Area	Yield	
1904-10-10	100	100	100	100	
1904-10-20	100	100	100	100	
1904-10-30	100	100	100	100	
1904-11-10	100	100	100	100	
1904-11-20	100	100	100	100	
1904-11-30	100	100	100	100	
1904-12-10	100	100	100	100	
1904-12-20	100	100	100	100	
1904-12-30	100	100	100	100	
1905-01-10	100	100	100	100	
1905-01-20	100	100	100	100	
1905-01-30	100	100	100	100	
1905-02-10	100	100	100	100	
1905-02-20	100	100	100	100	
1905-02-30	100	100	100	100	
1905-03-10	100	100	100	100	
1905-03-20	100	100	100	100	
1905-03-30	100	100	100	100	
1905-04-10	100	100	100	100	
1905-04-20	100	100	100	100	
1905-04-30	100	100	100	100	
1905-05-10	100	100	100	100	
1905-05-20	100	100	100	100	
1905-05-30	100	100	100	100	
1905-06-10	100	100	100	100	
1905-06-20	100	100	100	100	
1905-06-30	100	100	100	100	
1905-07-10	100	100	100	100	
1905-07-20	100	100	100	100	
1905-07-30	100	100	100	100	
1905-08-10	100	100	100	100	
1905-08-20	100	100	100	100	
1905-08-30	100	100	100	100	
1905-09-10	100	100	100	100	
1905-09-20	100	100	100	100	
1905-09-30	100	100	100	100	
1905-10-10	100	100	100	100	
1905-10-20	100	100	100	100	
1905-10-30	100	100	100	100	
1905-11-10	100	100	100	100	
1905-11-20	100	100	100	100	
1905-11-30	100	100	100	100	
1905-12-10	100	100	100	100	
1905-12-20	100	100	100	100	
1905-12-30	100	100	100	100	
1906-01-10	100	100	100	100	
1906-01-20	100	100	100	100	
1906-01-30	100	100	100	100	
1906-02-10	100	100	100	100	
1906-02-20	100	100	100	100	
1906-02-30	100	100	100	100	
1906-03-10	100	100	100	100	
1906-03-20	100	100	100	100	
1906-03-30	100	100	100	100	
1906-04-10	100	100	100	100	
1906-04-20	100	100	100	100	
1906-04-30	100	100	100	100	
1906-05-10	100	100	100	100	
1906-05-20	100	100	100	100	
1906-05-30	100	100	100	100	
1906-06-10	100	100	100	100	
1906-06-20	100	100	100	100	
1906-06-30	100	100	100	100	
1906-07-10	100	100	100	100	
1906-07-20	100	100	100	100	
1906-07-30	100	100	100	100	
1906-08-10	100	100	100	100	
1906-08-20	100	100	100	100	
1906-08-30	100	100	100	100	
1906-09-10	100	100	100	100	
1906-09-20	100	100	100	100	
1906-09-30	100	100	100	100	
1906-10-10	100	100	100	100	
1906-10-20	100	100	100	100	
1906-10-30	100	100	100	100	
1906-11-10	100	100	100	100	
1906-11-20	100	100	100	100	
1906-11-30	100	100	100	100	
1906-12-10	100	100	100	100	
1906-12-20	100	100	100	100	
1906-12-30	100	100	100	100	

Notes: The yield for each year is given in the table. The water level in the well is given in the table. The ground water applied for 10 - 100 ft. is given in the table. The history, treatment etc. see "Notes" 1904.

64/A/7

BARLEY - EXHAUSTION LAND HOOSFIELD 1964

(EX)

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

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

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

SUMMARY OF RESULTS

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



TABLE I - SUMMARY OF RESULTS

(%)

The data presented in this table are based on the results of the following experiments:

1. The effect of varying the concentration of the reactants on the rate of reaction.

2. The effect of varying the temperature on the rate of reaction.

SUMMARY OF RESULTS

Run	Temp. (°C)	Rate (M/min)
1	25.0	0.010
2	25.0	0.010
3	25.0	0.010
4	25.0	0.010
5	25.0	0.010
6	25.0	0.010
7	25.0	0.010
8	25.0	0.010
9	25.0	0.010
10	25.0	0.010
11	25.0	0.010
12	25.0	0.010

64/A/8

CLOVER - ROTHAMSTED GARDEN 1964

(GC)

The 111th year

For history etc. see 'Details' 1962.

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

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

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

SUMMARY OF RESULTS

DRY MATTER

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

Mean D.M. %: 21.0

Abbreviations used in this and future reports

Muriate of potash cwt per acre

None = K0

2 = K2

Sodium molybdate spray

None = S0

Sprayed = S1

1948

OVER - RUMBLE GARDEN

(3)

The 1948 year

was very dry and the rainfall was

very low. The total rainfall for the year was only 17.5 inches.

The amount of clover in the garden was very low and the yield was very low. The yield was only 1.5 tons per acre.

The dry weather in July continued through August and most of the year.

STATEMENT OF RESULTS

BY MONTHS

Month	Applied in 1947	Applied in 1948	Yield in 1948
July	1.5	1.5	1.5
August	1.5	1.5	1.5
Total	3.0	3.0	3.0

Yield in 1948

Observations made in this and other reports

Results of research on clover

1947 = 1.5  
1948 = 1.5

Results of research on clover

1947 = 1.5  
1948 = 1.5

64/A/9

SPRING BEANS, SITES OF CONTINUOUS WHEAT AND BARLEY EXPERIMENTS

WOBURN STACKYARD 1964

(WFW and WPB)

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

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

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

SUMMARY OF RESULTS

Crop in old scheme 1877 - 1955	Continuous wheat		Continuous barley	
	Wheat	Barley	Wheat	Barley
Crop 1959 - 61				

BEANS, GRAIN

Plot 1	19.0	17.3	20.6	21.8
2	16.0	18.0	17.0	21.4
3	18.3	15.6	24.9	19.8
4	20.1	14.4	18.4	16.0
5	14.4	16.7	15.2	13.7
6	16.4	18.4	27.5	24.8
7	18.3		19.2	
8	19.8		27.2	
9	21.2		30.2	
10 ax	16.6	21.6	24.8	21.6
10 bx	20.6	19.1	24.9	21.2
10 ay	15.9		22.6	
10 by	16.4		25.2	
11 ay		16.0		22.5
11 by		20.0		25.4
11 az	23.6		29.1	
11 bz	28.5		29.2	

Mean D.M. %: 86.2

All plots: 1962 - Oats, 1963 - Fallow



STATE OF CALIFORNIA  
 DEPARTMENT OF WATER RESOURCES  
 DIVISION OF WATER RESOURCES

WATER RESOURCES CONTROL

(FORM NO. 10)

FOR REPORTING WATER QUALITY DATA TO THE STATE WATER RESOURCES CONTROL BOARD

All data shall be reported on this form. The form shall be filled out for each sampling event. The form shall be filled out for each sampling event. The form shall be filled out for each sampling event.

The form shall be filled out for each sampling event. The form shall be filled out for each sampling event. The form shall be filled out for each sampling event.

REPORTING OF DATA

Station Name	Date	Temperature		pH	Dissolved Oxygen	Total Dissolved Solids	Total Suspended Solids	Total Phosphorus	Total Nitrogen	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Total Chloride	Total Sulfate	Total Hardness	Calcium	Magnesium	Total Hardness	Total Hardness	
		Surface	Bottom																	
101	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
102	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
103	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
104	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
105	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
106	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
107	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
108	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
109	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100
110	10/10/50	15.0	15.0	7.5	10.0	100	100	0.1	1.0	0.1	1.0	0.1	100	100	200	100	100	100	100	100

64/A/10.1

SAXMUNDHAM

ROTATION I

(SA)

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

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

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

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

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

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

Basal dressing: None.

Cultivations, etc.:-

- Mangolds and sugar beet. Dung applied: Sept 17, 1963. Ploughed: Oct 11. Bone meal applied: Mar 2, 1964. Superphosphate applied: Mar 12. Seed drilled at 7 lb per acre: Apr 13. Nitrate of soda applied: Apr 30. DDT applied at 14 lb powder: May 6. Muriate of potash applied: May 7. Singled: May 22. Sugar beet sprayed (no details): June 27. Sugar beet sprayed with demeton methyl: July 24. Harvested: Sept 30. Varieties: Mangolds - Golden Tankard, sugar beet - Klein E.
- Barley. Dung applied: Oct 28, 1963. Ploughed: Oct 29. Bone meal applied: Mar 2, 1964. Superphosphate applied, seed drilled at 2.75 bushels: Mar 11. Nitrate of soda applied: Apr 30. Muriate of potash applied: May 7. Harvested: Aug 13. Variety: Proctor.
- Peas. Dung applied: Oct 28, 1963. Ploughed: Oct 29. Bone meal applied: Mar 2, 1964. Superphosphate applied: Mar 12. Nitrate of soda applied: Mar 23. Seed drilled at 12 stones: Apr 9. Muriate of potash applied: Apr 30. Peas ploughed up because of bird damage: June 23. Variety: Lincoln Blue.
- Winter wheat. Dung applied: Sept 15, 1963. Ploughed: Sept 16. Bone meal, superphosphate and muriate of potash applied: Sept 26. Seed drilled: Sept 27. Nitrate of soda applied: Mar 23, 1964. Harvested: Aug 5. Variety: Cappelle.

64/A/10.2

SUMMARY OF RESULTS

Former Treatment plot no.	1964	Mangolds Roots + tops	Roots	Sugar beet Sugar Total % sugar Tops	Barley Grain Straw	Wheat Grain Straw
1	D	11.86	9.78	19.9	21.3	25.3
2	B	3.97	3.20	18.9	7.4	18.2
3	N	1.65	0.71	17.5	11.7	21.3
4	P	3.85	3.10	19.0	5.2	19.7
5	K	0.98	0.65	18.5	2.0	9.9
6	O	1.41	1.10	18.5	2.8	13.9
7	PK	2.55	2.28	19.6	3.1	18.1
8	NK	1.10	0.92	19.6	11.1	20.8
9	NP	7.62	5.48	19.5	14.4	27.4
10	NPK	8.25	7.13	20.0	16.1	25.2
Mean		4.33	3.44	19.1	9.5	20.0
Mean D.M.%:				13.4	12.7	34.2
					84.1	83.5
					89.3	87.0



64/A/11.1

SAXMUNDHAM

ROTATION II

(SB)

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

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

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

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

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

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

Basal dressing: None.

Cultivations, etc.:-

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

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



64/A/11.2

SUMMARY OF RESULTS

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

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