

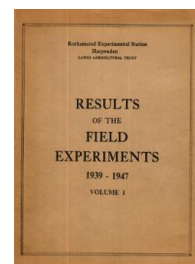
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# Yields of the Field Experiments 1939-1947 Volume 1

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## Classical Experiments

### Rothamsted Research

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A/1.1

#### WHEAT - BROADBALK

The first experimental crop of wheat on Broadbalk was sown in the autumn of 1843 for harvesting in 1844, and wheat has been grown each year ever since. The plot treatments varied until 1852 when the present system of manuring was established.

The general purpose of the experiment was to determine over a long period of years the manurial requirements of wheat, testing dung alone and a number of combinations of the ash constituents of crops (compounds of phosphorus, potassium, sodium and magnesium), together with several forms of nitrogen compounds. One plot running the whole length of the field was assigned to each of the treatments tested. Several varieties, some of them now out of cultivation, have been used during the experiment, but since 1899 Squareheads Master or the very similar Red Standard has been sown.

Weeds have always been a problem on Broadbalk, but in spite of this, continuous cropping was maintained until the harvest of 1925, except that half of every plot was fallowed in 1904 and the remainder in 1905, and this process was repeated in 1914 and 1915. In 1926 it was decided that more systematic methods must be tried and a system of regular bare fallowing was introduced. The field was divided into five equal sections so that every year a part of each of the original  $\frac{1}{2}$  acre plots could be under fallow and the remainder under crop. From 1926-29 two sections were cropped yearly, leaving three fallow; in 1930 the whole field was cropped and then in 1931 the present arrangement was begun under which one section of the field is fallowed every year. In each year therefore, the yields of every treatment are obtained for the 1st, 2nd, 3rd and 4th years after fallow.

Since 1943 it has been necessary to hand weed wild oats before harvesting,



A/1.2

Treatments  
Symbols and amounts per acre

O	Unmanured
N <sub>1</sub> , N <sub>2</sub> , N <sub>3</sub>	Sulphate of ammonia, 43 lb.N, 86 lb.N, 129 lb.N
N <sub>1</sub> ', N <sub>2</sub> '	Nitrate of soda, 43 lb.N, 86 lb.N
P	Superphosphate, 65 lb.P <sub>2</sub> O <sub>5</sub>
K	Sulphate of potash, 98 lb.K <sub>2</sub> O
S	Sulphate of soda, 366 lb.
M	Sulphate of magnesia, 280 lb.
C	Complete mineral manure, consisting of superphosphate (65 lb.P <sub>2</sub> O <sub>5</sub> ), sulphate of potash (98 lb.K <sub>2</sub> O), sulphate of soda (100 lb.) and sulphate of magnesia (100 lb.)
C'	As C but without the superphosphate
D	Farmyard manure, 14 tons
R	Rape cake (castor bean meal from 1940 onwards), 1889 lb.

Dung is ploughed-in in autumn. Rape cake and minerals are applied in autumn on the seed bed. 21.5 lb. N per acre of the N<sub>1</sub>, N<sub>2</sub> and N<sub>3</sub> treatments is applied in autumn and the remainder of the dressing in spring, except that Plot 15 receives its full dressing in autumn. Nitrate of soda is applied in spring, there being two applications at intervals of a month on plot 16. Plot 2A was unmanured before 1885.

The experiment is discussed, and early departures from the present manuring scheme are described by Sir John Russell and D.J. Watson in "The Rothamsted Field Experiments in the growth of wheat", Imp. Bureau Soil Sci. Tech. Comm. No. 40.

Investigations by the Soil Microbiology Department are described by B.N. Singh, "The effect of artificial fertilizers and dung on the numbers of amoebae in Rothamsted soils", J. Gen. Microbiol. 3, (1949), 204.

Weed surveys have been made annually by the Botany Department.



A/1.3

Wheat - Broadbalk

The present following cycle and the preceding fallows are shown in the diagram below. (C = crop, F = fallow). The sections (I to V) are numbered in order from the upper (western) end of the field. Preparatory to the first fallow the field was harvested in five separate sections (1925).

Year	I	II	III	IV	V	Year	I	II	III	IV	V
1926	F	F	F	C	C	1931, -36, -41, -46	F	C	C	C	C
1927	F	F	F	C	C	1932, -37, -42, -47	C	F	C	C	C
1928	C	C	F	F	F	1933, -38, -43, -48	C	C	C	C	F
1929	C	C	F	F	F	1934, -39, -44, -49	C	C	C	F	C
1930	C	C	C	C	C	1935, -40, -45, -50	C	C	F	C	C

Plot 20 extends over sections I and II only.

Crop Notes

Crop Year	Date sown	Date harvested	Variety
1939	Oct. 26	Aug. 18	Red Standard
1940	Oct. 25	Aug. 8	Squareheads Master
1941	Oct. 25	Aug. 20	Squareheads Master
1942	Oct. 24	Aug. 15	Red Standard
1943	Oct. 15	Aug. 4	Red Standard
1944	Oct. 16	Aug. 5	Red Standard
1945	Nov. 8	Aug. 12	Red Standard
1946	Oct. 20	Aug. 16	Squareheads Master 13/4
1947	Oct. 31	Aug. 8	Squareheads Master 13/4

In 1941 there was a considerable amount of lodging, particularly on plots 2A, 2B, 8, 12, 14 and 16.



A/1.4

		Total Grain: cwt. per acre					Total Straw: cwt. per acre				
Years after fallow		1	2	3	4	Mean	1	2	3	4	Mean
96th season, 1939											
Plot	Section	V	II	I	III		V	II	I	III	
2A	D	24.1	18.5	15.7	19.7	19.5	62.7	40.1	43.0	42.8	47.2
2B	D	26.1	23.5	15.7	18.1	20.8	64.2	51.6	48.9	47.8	53.1
3	O	16.7	7.7	8.7	8.9	10.5	29.7	17.0	16.4	19.1	20.6
5	C	18.6	9.9	9.3	7.8	11.4	36.1	24.9	21.9	19.2	25.5
6	N <sub>1</sub> C	22.5	13.8	10.9	11.8	14.8	45.3	33.9	29.5	54.5	40.8
7	N <sub>2</sub> C	26.4	19.3	13.5	15.8	18.8	55.8	43.4	39.8	37.7	44.2
8	N <sub>3</sub> C	20.8	21.6	11.8	12.5	16.7	59.0	54.7	62.9	52.9	57.4
9	N <sub>1</sub> 'C	24.1	16.2	11.3	14.0	16.4	53.5	35.2	28.5	29.8	36.8
10	N <sub>2</sub>	20.2	19.6	14.4	17.1	17.8	38.8	35.6	33.4	32.4	35.0
11	N <sub>2</sub> P	18.6	18.9	13.4	15.8	16.7	36.6	35.7	28.8	30.4	32.9
12	N <sub>2</sub> FS	21.2	20.4	14.8	16.4	18.2	42.4	40.1	32.7	32.3	36.9
13	N <sub>2</sub> PK	23.1	17.5	14.4	15.3	17.6	55.2	42.1	33.8	35.2	41.6
14	N <sub>2</sub> PM	24.6	19.9	14.1	17.1	18.9	52.7	35.3	29.1	32.4	37.4
15	N <sub>2</sub> *C	17.8	16.5	12.7	12.8	15.0	37.1	34.3	28.8	29.3	32.4
16	N <sub>2</sub> 'C	25.4	18.5	11.8	13.5	17.3	69.4	48.9	43.6	44.9	51.7
17	N <sub>2</sub> and C in (C) alternate (N <sub>2</sub> ) years	13.7	10.1	5.6	7.9	9.3	31.6	24.4	18.8	21.8	24.2
18		22.5	17.1	14.6	13.5	16.9	43.8	38.1	34.8	25.9	35.6
19	R	21.8	17.5	12.4	16.2	17.0	42.6	32.6	27.1	29.2	32.9
20	N <sub>2</sub> C'	19.3	13.2			16.2	42.6	32.7			37.6

97th season, 1940											
Plot	Section	IV	V	II	I		IV	V	II	I	
2A	D <sub>1</sub>	33.1	31.9	27.7	15.4 <sup>+</sup>	27.0	55.7	44.6	42.2	39.3	45.4
2B	D	37.0	29.0	32.3	23.8 <sup>+</sup>	30.5	57.8	42.4	46.5	43.3	47.5
3	O	21.5	13.6	12.6	15.4	15.8	28.6	18.7	16.7	18.3	20.6
5	C	25.5	12.7	14.4	16.3	17.2	38.8	17.0	17.9	22.6	24.1
6	N <sub>1</sub> C	30.5	17.1	17.8	20.8	21.6	47.3	25.6	23.6	28.2	31.2
7	N <sub>1</sub> 'C	34.6	21.1	24.4	26.7	26.7	61.7	35.2	37.7	42.4	44.2
8	N <sub>2</sub> C	32.2	27.1	27.4	29.9	29.2	61.8	51.7	47.5	55.3	54.1
9	N <sub>1</sub> 'C	31.7	19.0	20.9	26.3	24.5	50.7	30.3	33.0	43.4	39.4
10	N <sub>2</sub>	14.8	18.4	17.5	19.8	17.6	26.0	24.3	21.9	27.8	25.0
11	N <sub>2</sub> P	27.9	19.0	20.0	20.9	22.0	41.4	31.5	25.3	30.0	32.0
12	N <sub>2</sub> FS	32.9	20.3	22.9	25.5	25.4	48.1	29.8	30.9	36.2	36.2
13	N <sub>2</sub> PK	35.7	17.8	22.5	24.0	25.0	59.7	33.3	33.6	37.7	41.1
14	N <sub>2</sub> PM	34.4	18.7	22.1	24.3	24.9	54.9	30.2	30.4	36.2	37.9
15	N <sub>2</sub> *C	32.6	15.1	22.6	25.8	24.0	51.8	25.1	33.3	38.3	37.1
16	N <sub>2</sub> 'C	33.8	26.8	29.6	27.6	29.4	60.8	40.1	43.0	45.3	47.3
17	N <sub>2</sub> and C in (N <sub>2</sub> ) alternate (C) years	33.7	25.2	26.2	28.6	28.4	56.4	39.1	39.3	42.2	44.2
18		24.4	11.0	11.5	12.2	14.8	33.5	17.1	17.3	15.3	20.8
19	R	34.2	19.0	21.0	20.7	23.7	52.3	28.5	29.3	31.6	35.4
20	N <sub>2</sub> C'	-	-	20.4	23.0	21.7	-	-	25.4	33.4	29.4



Wheat - Broadbalk

A/1.5

		Total Grain: cwt. per acre					Total Straw†: cwt. per acre					
		Years after fallow	1	2	3	4	Mean	1	2	3	4	Mean
98th season, 1941												
Plot	Section	III	IV	V	II		III	IV	V	II		
2A	D	16.8	13.7	14.4	9.5	13.6	40.1	26.6	25.0	25.4	29.3	
2B	D	19.2	16.0	16.2	9.1	15.1	41.8	30.8	23.3	25.7	31.6	
3	O	14.3	4.5	6.6	4.7	7.5	23.9	7.6	8.7	7.8	12.0	
5	C	14.9	5.0	7.2	5.9	8.2	23.3	10.3	12.4	10.0	14.0	
6	N <sub>1</sub> C	15.7	9.6	9.8	7.6	10.7	29.1	16.1	15.2	14.0	18.6	
7	N <sub>2</sub> C	17.1	14.2	12.6	11.3	13.8	39.7	31.7	27.2	22.2	30.2	
8	N <sub>3</sub> C	20.9	14.3	13.1	16.2	16.1	46.2	37.6	32.1	35.0	37.7	
9	N <sub>1</sub> 'C	17.8	12.1	11.9	11.6	13.4	34.6	22.8	22.2	22.8	25.6	
10	N <sub>2</sub>	13.8	14.3	12.5	12.2	13.2	26.6	27.2	19.6	17.4	22.7	
11	N <sub>2</sub> P	16.7	14.5	10.9	11.1	13.3	30.2	26.1	19.4	18.0	23.4	
12	N <sub>2</sub> FS	18.2	16.0	14.1	13.8	15.5	35.0	27.0	23.6	20.2	26.4	
13	N <sub>2</sub> FK	19.3	14.5	9.9	11.3	13.8	28.1	28.0	22.1	18.6	24.2	
14	N <sub>2</sub> FM	19.7	16.7	11.8	12.3	15.1	34.4	28.3	22.3	13.4	25.8	
15	N <sub>2</sub> *C	13.4	12.0	5.6	9.8	11.4	36.7	20.1	11.7	14.2	20.7	
16	N <sub>2</sub> 'C	21.7	15.9	14.9	15.7	17.0	49.7	36.2	31.7	31.0	37.2	
17}	N <sub>2</sub> and C in (C) alternate years (N <sub>2</sub> )	15.6	5.7	4.0	4.1	7.4	35.5	8.4	6.2	6.4	14.1	
18}		18.8	12.2	12.4	10.1	13.4	31.8	21.3	21.6	18.0	23.2	
19	R	18.0	13.5	9.3	9.2	12.5	29.9	22.7	13.3	11.6	19.4	
20	N <sub>2</sub> C'				11.6	11.6				19.6	19.6	

99th season, 1942												
Plot	Section	I	III	IV	V		I	III	IV	V		
2A	D	20.7	23.7	24.5	27.9	24.2	52.2	43.2	45.1	43.6	46.0	
2B	D	19.6	26.8	28.6	26.6	25.4	53.5	43.2	45.1	42.4	47.3	
3	O	15.7	10.1	15.9	15.0	14.2	22.7	13.5	20.1	18.6	18.7	
5	C	21.6	11.7	16.7	17.0	16.8	34.7	15.5	23.7	20.7	23.6	
6	N <sub>1</sub> C	25.1	16.3	18.6	21.5	20.4	42.3	22.7	26.7	29.4	30.3	
7	N <sub>2</sub> C	28.9	23.0	27.1	26.4	26.4	43.8	33.9	37.1	36.4	39.0	
8	N <sub>3</sub> C	25.8	25.7	28.8	24.8	26.3	52.4	39.8	41.6	39.7	43.4	
9	N <sub>1</sub> 'C	27.1	20.5	17.8	18.0	20.8	45.2	29.1	24.3	24.0	30.6	
10	N <sub>2</sub>	22.9	23.4	18.5	17.2	20.5	32.2	28.6	22.8	21.4	26.2	
11	N <sub>2</sub> P	18.2	21.3	17.9	16.6	18.5	29.2	28.2	23.1	31.2	27.9	
12	N <sub>2</sub> FS	24.5	24.4	25.4	21.0	23.8	37.0	36.3	29.7	26.3	32.3	
13	N <sub>2</sub> FK	23.0	22.7	23.3	23.8	24.5	43.5	31.3	33.1	32.9	36.4	
14	N <sub>2</sub> FM	25.0	22.4	25.0	22.3	23.7	35.4	32.2	32.2	28.6	32.1	
15	N <sub>2</sub> *C	23.6	20.9	23.7	21.2	23.6	49.8	33.5	33.5	32.6	37.4	
16	N <sub>2</sub> 'C	28.1	25.6	24.3	23.5	25.4	46.6	36.2	35.5	33.9	38.0	
17}	N <sub>2</sub> and C in (N <sub>2</sub> ) alternate years (C)	23.8	22.2	25.8	24.0	25.2	43.4	31.6	37.2	34.7	36.7	
18}		21.6	10.4	11.5	13.6	14.3	29.6	14.6	15.5	22.1	20.4	
19	R	31.1	22.2	23.0	24.7	25.2	42.7	29.7	33.1	33.3	34.7	
20	N <sub>2</sub> C'	24.0				24.0	35.0				35.0	

† Includes straw, cavings and chaff. \* Sulphate of ammonia applied in autumn.

N



A/1.6

Years after fallow		Total Grain: cwt. per acre					Total Straw <sup>†</sup> : cwt. per acre				
		1	2	3	4	Mean	1	2	3	4	Mean
100th season, 1943											
Plot	Section	II	I	III	IV		II	I	III	IV	
2A	D	28.5	20.0	15.9	6.6	17.7	62.5	49.8	41.0	46.8	50.0
2B	D	29.7	21.4	23.1	14.4	22.2	65.9	57.5	48.6	49.4	55.4
3	O	25.0	13.4	10.1	8.6	14.3	37.9	17.6	14.2	11.1	20.2
5	C	24.9	12.3	11.0	8.8	14.2	43.3	17.6	17.3	14.1	23.1
6	N <sub>1</sub> C	25.0	17.0	14.7	13.3	17.5	46.3	28.2	26.1	25.3	31.5
7	N <sub>2</sub> C	28.5	26.1	21.7	21.3	24.4	54.4	50.7	44.8	43.9	48.4
8	N <sub>3</sub> C	27.3	23.6	20.5	18.9	22.6	58.7	60.0	54.3	54.3	56.8
9	N <sub>1</sub> 'C	26.5	20.8	16.4	16.5	20.0	46.8	40.5	32.3	33.1	38.3
10	N <sub>2</sub>	24.1	25.1	20.6	19.0	22.2	36.4	41.2	34.3	31.0	35.7
11	N <sub>2</sub> P	23.8	24.7	19.6	19.3	21.8	36.2	42.4	30.7	30.9	35.0
12	N <sub>2</sub> PS	25.8	23.4	21.7	22.9	23.4	44.2	43.3	36.2	40.5	41.0
13	N <sub>2</sub> PK	30.0	21.3	19.5	20.3	22.8	53.7	47.5	38.7	42.3	45.6
14	N <sub>2</sub> PM	26.4	25.1	20.9	21.6	23.5	41.1	45.9	35.4	38.0	40.1
15	N <sub>2</sub> *C	26.5	22.2	19.1	19.5	21.8	45.1	41.9	37.3	36.0	40.1
16	N <sub>2</sub> 'C	33.2	25.6	23.7	23.5	27.8	56.1	52.2	50.8	43.5	50.6
17	N <sub>2</sub> and C in (C) alternate (N <sub>2</sub> ) years	23.3	11.4	9.7	8.5	13.2	36.4	17.3	14.4	12.5	20.2
18		27.8	22.1	22.2	22.2	23.6	45.3	38.1	39.9	39.8	40.8
19	R	28.9	23.6	19.1	20.2	23.0	43.6	37.8	31.5	35.3	37.0
20	N <sub>2</sub> C'	23.2	19.9			21.6	36.2	37.2			36.7

101st season, 1944											
Plot	Section	V	II	I	III		V	II	I	III	
2A	D	29.8	22.7	16.6	15.8	21.2	62.4	48.5	41.8	36.4	47.3
2B	D	29.2	27.5	22.5	23.2	25.6	53.3	51.6	50.0	48.8	50.9
3	O	18.6	8.3	7.9	9.1	11.0	21.4	12.1	12.1	12.0	14.4
5	C	20.2	9.0	9.1	10.2	12.1	29.3	11.8	11.8	14.1	16.8
6	N <sub>1</sub> C	25.1	11.7	14.9	13.1	16.2	38.7	18.7	22.9	19.2	24.9
7	N <sub>2</sub> C	29.5	19.3	22.8	20.6	23.0	46.3	36.9	33.6	33.9	38.9
8	N <sub>3</sub> C	29.9	23.6	24.9	27.0	26.4	54.5	44.4	53.2	45.4	49.4
9	N <sub>1</sub> 'C	23.9	13.9	15.4	19.8	18.2	35.1	22.2	23.2	31.3	28.0
10	N <sub>2</sub>	16.2	18.4	17.4	17.6	17.4	26.2	27.4	29.4	25.2	27.0
11	N <sub>2</sub> P	15.8	15.7	14.2	13.8	14.9	25.4	26.1	27.8	24.6	26.0
12	N <sub>2</sub> PS	22.6	16.5	17.2	16.6	18.2	36.9	25.3	31.8	27.0	30.2
13	N <sub>2</sub> PK	28.7	20.1	20.2	17.7	21.7	46.7	36.6	41.0	31.9	39.0
14	N <sub>2</sub> PM	27.2	16.0	17.3	15.6	19.0	42.9	27.9	31.5	26.6	32.2
15	N <sub>2</sub> *C	25.8	19.3	20.7	20.1	21.5	45.8	32.0	40.9	31.7	37.6
16	N <sub>2</sub> 'C	31.4	23.4	23.7	26.5	26.2	51.6	30.8	36.8	37.1	39.1
17	N <sub>2</sub> and C in (N <sub>2</sub> ) alternate (C) years	26.9	18.9	19.2	20.0	21.2	44.3	28.2	31.1	29.2	33.2
18		27.2	8.9	6.1	7.7	12.5	42.1	9.2	8.5	10.6	17.6
19	R	29.3	18.1	16.1	15.4	19.7	50.9	28.4	23.4	27.5	32.6
20	N <sub>2</sub> C'		20.7	13.9		17.33		33.4	21.3		27.4

<sup>†</sup>Includes straw, cavings and chaff. \* Sulphate of ammonia applied in autumn.



A/1.7

Wheat - Broadbalk

		Total Grain: cwt. per acre					Total Straw <sup>†</sup> : cwt. per acre				
Years after fallow		1	2	3	4	Mean	1	2	3	4	Mean
102nd season, 1945											
Plot	Section	IV	V	II	I		IV	V	II	I	
2A	D	25.1	28.9	23.1	12.3	22.4	44.7	46.1	43.3	47.7	45.4
2B	D	23.4	31.0	25.0	17.5	24.2	52.5	49.0	46.5	52.5	50.1
3	O	14.6	11.6	6.5	7.6	10.1	22.1	14.6	10.8	12.0	14.9
5	C	20.9	14.9	9.9	10.5	14.0	34.0	17.6	13.3	15.5	20.1
6	N <sub>1</sub> C	23.5	18.9	11.4	13.7	16.9	40.2	30.7	19.4	22.1	28.1
7	N <sub>2</sub> C	23.3	20.8	16.1	22.3	20.6	42.0	36.2	29.5	43.4	37.8
8	N <sub>2</sub> C	24.0	27.8	22.5	25.2	24.9	43.9	49.4	40.9	55.2	47.4
9	N <sub>1</sub> 'C	15.2	15.4	13.2	14.7	14.6	30.3	25.1	22.5	27.6	26.4
10	N <sub>2</sub>	14.6	21.7	15.3	13.7	16.3	24.4	31.8	24.1	24.8	26.3
11	N <sub>2</sub> P	14.2	17.5	13.9	16.2	15.4	29.5	26.2	22.9	29.2	27.0
12	N <sub>2</sub> FS	18.5	22.0	16.9	16.8	18.6	36.0	34.2	27.6	31.5	32.3
13	N <sub>2</sub> FK	23.3	22.3	15.1	15.4	19.0	45.1	40.2	27.9	31.9	36.3
14	N <sub>2</sub> FM	16.0	23.8	14.4	14.4	17.2	38.4	39.1	25.1	29.5	33.0
15	N <sub>2</sub> *C	22.4	20.0	17.7	18.4	19.6	41.2	33.3	30.6	36.4	35.4
16	N <sub>2</sub> 'C	21.0	23.6	20.8	20.4	21.4	41.8	41.5	39.3	43.4	41.5
17	N <sub>2</sub> and C in (C) alternate (N <sub>2</sub> ) years	16.6	10.3	7.7	9.2	11.0	22.9	15.9	12.4	15.1	18.33
18		20.8	16.5	17.2	16.4	17.7	38.3	26.5	28.4	28.4	32.9
19	R	23.2	18.0	14.9	16.3	18.1	41.1	27.3	25.2	28.3	30.4
20	N <sub>2</sub> C'			13.6	15.2	14.4			28.1	28.6	28.4

103rd season, 1946											
Plot	Section	III	IV	V	II		III	IV	V	II	
2A	D	31.7	15.4 <sup>+</sup>	20.0	17.9	21.2	71.6	55.1 <sup>+</sup>	55.7	45.1	56.9
2B	D	29.3	18.2 <sup>+</sup>	21.0	22.2	22.7	75.5	52.2 <sup>+</sup>	48.3	48.6	56.2
3	O	18.7	7.3	7.3	7.3	10.2	35.9	16.0	14.6	15.9	20.6
5	C	20.4	9.2	9.7	10.0	12.3	40.0	22.0	19.7	24.3	26.5
6	N <sub>1</sub> C	24.4	9.8	9.9	8.8	13.2	53.6	29.2	25.8	26.8	33.8
7	N <sub>2</sub> C	26.4	15.9	15.3	14.4	18.0	63.9	41.2	38.1	36.4	44.9
8	N <sub>2</sub> C	31.4	20.2	20.1	17.0	22.2	72.0	59.9	57.7	52.6	60.6
9	N <sub>1</sub> 'C	26.6	18.2	14.6	12.1	17.9	52.8	40.3	34.2	31.9	39.8
10	N <sub>2</sub>	25.6	19.5	12.3	16.9	18.6	51.8	40.8	33.9	33.1	39.9
11	N <sub>2</sub> P	20.2	15.2	15.2	14.5	16.3	39.3	44.2	34.1	32.1	37.4
12	N <sub>2</sub> FS	22.4	15.3	11.9	16.0	16.4	45.3	37.7	34.0	33.2	37.6
13	N <sub>2</sub> FK	29.0	17.4	14.9	14.7	19.0	62.0	44.0	39.6	38.0	45.9
14	N <sub>2</sub> FM	25.3	20.9	16.8	15.1	19.5	47.8	45.5	41.4	32.6	41.8
15	N <sub>2</sub> *C	25.3	17.9	15.5	14.7	18.4	58.1	38.5	32.8	34.5	41.0
16	N <sub>2</sub> 'C	31.9	20.6	19.2	16.2	22.0	67.6	53.3	47.9	43.1	53.0
17	N <sub>2</sub> and C in (N <sub>2</sub> ) alternate (C) years	24.5	19.1	19.6	15.9	19.8	60.6	42.2	46.5	36.0	46.3
18		18.9	9.7	7.9	3.3	10.0	42.3	20.5	18.3	10.2	22.8
19	R	24.3	18.1	17.0	13.3	18.2	50.3	39.4	37.6	27.7	38.8
20	N <sub>2</sub> C'				11.1	11.1				28.1	28.1



A/1.8

Years after fallow		Total Grain: cwt. per acre					Total Straw <sup>†</sup> : cwt. per acre				
		1	2	3	4	Mean	1	2	3	4	Mean
104th season, 1947											
Plot	Section	I	III	IV	V		I	III	IV	V	
2A	D	19.1	14.6	19.4	14.6	16.9	28.3	19.7	25.9	20.7	23.6
2B	D	20.6	16.9	15.0	14.5	16.8	31.9	25.7	20.3	20.6	24.6
3	O	10.1	4.4	5.7	4.9	6.3	12.0	5.3	7.3	6.7	7.8
5	C	16.5	6.2	9.5	7.9	10.0	24.3	9.1	12.8	12.9	14.8
6	N <sub>1</sub> C	19.0	9.0	8.8	7.3	11.0	25.0	13.2	15.6	13.8	16.9
7	N <sub>2</sub> C	22.3	12.5	7.8	7.1	12.4	28.4	18.1	13.9	15.6	19.0
8	N <sub>3</sub> C	20.7	16.7	12.4	11.5	15.3	34.3	23.6	22.3	23.0	25.8
9	N <sub>1</sub> 'C	15.1	9.4	6.5	6.9	9.5	25.5	11.3	10.0	11.2	14.5
10	N <sub>2</sub>	8.1	8.1	5.3	4.1	6.4	16.7	11.5	7.7	6.6	10.6
11	N <sub>2</sub> P	9.4	9.8	5.8	4.0	7.2	22.9	12.0	7.5	8.1	12.6
12	N <sub>2</sub> PS	13.0	10.0	7.1	5.5	8.9	23.9	14.0	11.5	13.6	15.8
13	N <sub>2</sub> PK	22.2	9.7	6.7	6.1	11.2	30.8	15.0	12.2	11.3	17.3
14	N <sub>2</sub> PM	14.5	10.7	7.3	6.6	9.8	25.3	17.5	11.1	12.5	16.6
15	N <sub>2</sub> *C	20.5	11.3	9.1	7.0	12.0	29.2	20.6	13.5	11.6	18.7
16	N <sub>2</sub> 'C	19.2	13.6	11.3	11.1	13.8	28.5	19.3	19.4	18.8	21.5
17	N <sub>2</sub> and C in (C) alternate (N <sub>2</sub> ) years	14.6	5.0	5.6	6.4	7.9	21.7	9.7	8.4	9.7	12.4
18		16.1	10.3	14.9	15.3	14.2	21.2	15.2	19.6	19.4	18.8
19	R	15.7	10.0	8.5	10.2	11.1	21.6	15.1	15.9	16.9	17.4
20	N <sub>2</sub> C'	9.7				9.7	15.0				15.0

<sup>†</sup>Includes straw, cavings and chaff

\*Sulphate of ammonia applied in autumn

<sup>†</sup>Yields from small areas left after cutting green wheat and wild oats.  
(only happened in 1940 and 1946)



BARLEY - HOOSFIELD

Experiments on barley grown continuously on the same land were begun on Hoosfield in 1852, the general purpose being the same as on Broadbalk. On Hoosfield however the mineral manures in various combinations were laid on strips running lengthways along the field, and these were crossed at right angles by strips of various nitrogenous manures, to give plots of approximately 1/6 acre - one for each treatment. Dung alone was applied to a plot outside this factorial arrangement.

Since 1919, Plumage Archer has been the variety grown, except that from 1929 to 1932 Plumage Archer and Spratt Archer were grown in strips running through all the plots. Weeds have been troublesome on Hoosfield, as on Broadbalk, and it was found necessary to fallow the whole field in 1912, 1933 and 1943. Commencing in 1944 a yearly spraying with DNOC (dinitro-ortho-cresol) was given in late May or early June to check broad-leaved weeds, but wild oat (*Avena fatua*) has become a serious pest in recent years and hand pulling is regularly carried out.

Weed surveys have been made by the Botany Department.

Treatments

Symbols and amounts per acre

Cross Dressings

- O Unmanured
- A Sulphate of ammonia, 43 lb. N
- AA Nitrate of soda, 43 lb. N
- AAS Nitrate of soda, 43 lb. N; silicate of soda, 400 lb.
- C Rape cake (castor bean meal from 1940 onwards), 1,000 lb.

Strip Dressings

- P Superphosphate, 65 lb. P<sub>2</sub>O<sub>5</sub>
- K Sulphate of potash, 98 lb. K<sub>2</sub>O
- S Sulphate of soda, 100 lb.
- M Sulphate of magnesia, 100 lb.

Plot Dressings

- D Farmyard manure, 14 tons
- D' Unmanured, following farmyard manure 1852-71
- F Unmanured, following furnace ash 1852-1933
- N' Nitrate of soda, 43 lb. N
- N'' Nitrate of soda, 43 lb. N, following double dressing 1852-57

Dung is ploughed in in winter; all other manures are broadcast in spring during the preparation of the seedbed.

Crop Notes

Year	Sown	Harvested	Year	Sown	Harvested
1939	Mar. 10	Aug. 25	1944	Mar. 29	Aug. 18
1940	Mar. 12	Aug. 6	1945	Mar. 9	Aug. 8
1941	Mar. 17	Aug. 25	1946	Mar. 25	Aug. 23
1942	Mar. 29	Aug. 15	1947	Apr. 17	Aug. 19

N



A/2.2

Total grain: cwt. per acre

Plot	Cross Dressing	Strip Dressing	1939	1940	1941	1942	1944	1945	1946	1947
1	O	O	9.2	6.4	2.1	8.8	14.8	11.2	10.2	5.4
2	O	P	12.5	9.4	4.4	11.1	22.7	11.7	10.3	6.7
3	O	KSM	12.0	7.8	3.3	12.0	17.9	18.1	11.8	8.3
4	O	PKSM	14.7	10.9	4.7	14.9	27.8	21.1	13.3	9.1
5	O	FK	11.9	6.8	3.8	14.9	28.6	20.8	13.4	10.8
1	A	O	17.1	12.2	5.7	9.4	10.4	15.6	15.0	7.1
2	A	P	20.7	15.8	8.5	8.0	15.3	22.9	14.4	9.0
3	A	KSM	18.4	13.5	6.6	10.2	11.8	21.9	15.6	11.8
4	A	PKSM	24.9	14.4	12.2	12.2	21.1	22.0	16.0	12.5
5	A	FK	22.2	18.2	8.5	9.0	13.9	14.8	22.4	17.4
1	AA	O	16.5	13.9	5.5	6.0	12.1	18.1	19.6	7.7
2	AA	P	24.3	20.8	8.8	9.9	21.3	25.0	16.4	12.0
3	AA	KSM	18.0	14.3	6.8	10.8	11.4	24.2	18.8	11.5
4	AA	PKSM	24.6	21.2	12.2	14.9	24.4	28.7	22.5	13.4
1	AAS	O	19.8	19.5	7.1	9.6	14.4	18.4	23.3	11.0
2	AAS	P	24.5	20.5	8.2	10.2	24.4	24.0	20.0	17.4
3	AAS	KSM	22.4	19.4	8.4	12.8	12.4	22.6	12.5	13.6
4	AAS	PKSM	26.2	23.2	12.9	16.2	26.5	26.8	24.8	16.6
1	C	O	21.0	16.6	7.7	7.4	16.4	19.4	14.7	14.6
2	C	P	21.4	16.6	7.6	7.5	28.5	27.4	17.9	18.6
3	C	KSM	19.6	16.8	9.5	10.3	22.1	24.9	40.5	16.7
4	C	PKSM	24.1	19.3	10.6	13.2	28.5	27.5	38.9	16.1
7-1		D'	15.3	9.7	4.2	13.8	25.4	23.6	14.0	10.5
7-2		D	32.8	20.8	7.6	12.7	30.9	36.6	32.6	21.0
6-1		O	10.9	6.3	2.1	8.7	17.8	14.6	8.1	6.9
6-2		F	10.4	5.3	1.9	6.9	15.1	13.2	11.1	8.1
1		N'	17.4	14.8	7.1	8.1	13.1	18.5	17.8	12.9
2		N''	21.4	17.8	7.8	8.0	17.8	23.1	17.8	19.6



X  
Vertical lines

Barley - Hoosfield

A/2 3

Barley - Hoosfield

Total straw: cwt. per acre

Plot	Cross Dressing	Strip Dressing	1939	1940	1941	1942	1944	1945	1946	1947
1	O	O	11.8	8.6	8.2	10.9	14.8	12.1	9.8	5.0
2	O	P	12.3	7.3	7.1	10.8	18.2	10.8	9.4	6.4
3	O	KSM	19.0	9.6	9.9	15.2	17.4	17.0	13.0	8.3
4	O	PKSM	20.0	13.7	12.1	19.5	23.2	18.1	14.8	9.1
5	O	PK	15.5	9.9	14.7	19.0	27.8	19.9	14.4	10.0
1	A	O	21.1	18.8	18.5	16.1	11.6	15.8	15.4	5.7
2	A	P	23.0	20.7	21.5	16.6	14.9	25.9	16.5	9.5
3	A	KSM	23.0	16.1	18.7	17.8	12.7	24.7	21.5	13.4
4	A	PKSM	25.0	20.9	19.3	23.1	21.6	31.0	22.2	10.6
5	A	PK	29.1	28.7	25.2	29.8	24.0	39.2	31.4	20.0
1	AA	O	27.2	27.6	18.9	19.9	15.3	25.7	22.4	9.6
2	AA	P	27.9	24.7	25.2	22.1	21.2	30.0	22.4	14.5
3	AA	KSM	25.1	21.2	23.8	20.7	13.1	28.4	25.3	15.4
4	AA	PKSM	25.7	24.5	21.8	27.6	22.4	32.0	28.0	11.1
1	AAS	O	28.3	26.0	22.2	26.3	19.8	30.4	27.1	12.6
2	AAS	P	27.8	29.0	21.5	25.2	24.6	32.1	26.7	15.0
3	AAS	KSM	27.2	22.4	22.3	27.0	15.9	32.4	20.1	13.0
4	AAS	PKSM	27.5	25.4	21.7	28.2	27.3	35.2	31.9	12.7
1	C	O	25.7	25.1	21.5	21.6	18.1	29.4	24.1	15.2
2	C	P	25.4	23.9	21.0	21.4	26.9	32.0	23.6	17.8
3	C	KSM	23.0	21.1	21.5	24.3	24.0	29.3	61.5	15.4
4	C	PKSM	25.8	23.1	20.1	27.2	32.6	33.4	52.3	26.0
7-1		D'	21.0	16.0	13.2	16.6	23.9	23.5	17.9	11.8
7-2		D	41.4	35.6	32.2	31.7	32.5	45.2	47.3	21.4
6-1		O	14.1	10.1	7.9	13.8	18.7	14.5	10.7	8.4
6-2		F	13.9	6.4	7.8	11.4	13.8	13.5	11.3	8.3
1		N'	24.0	23.4	22.8	23.3	16.6	26.8	21.7	13.9
2		N''	28.5	25.4	22.7	24.8	19.8	29.3	21.8	18.2

35.6  
X

N



C-34 11/11/2008

Detailed Report

Total amount paid: \$100.00

Line	Code	Description	Rate	Quantity	Amount	Balance	Notes
1			0	0	0	100.00	
2			0	0	0	100.00	
3			0	0	0	100.00	
4			0	0	0	100.00	
5			0	0	0	100.00	
6			0	0	0	100.00	
7			0	0	0	100.00	
8			0	0	0	100.00	
9			0	0	0	100.00	
10			0	0	0	100.00	
11			0	0	0	100.00	
12			0	0	0	100.00	
13			0	0	0	100.00	
14			0	0	0	100.00	
15			0	0	0	100.00	
16			0	0	0	100.00	
17			0	0	0	100.00	
18			0	0	0	100.00	
19			0	0	0	100.00	
20			0	0	0	100.00	
21			0	0	0	100.00	
22			0	0	0	100.00	
23			0	0	0	100.00	
24			0	0	0	100.00	
25			0	0	0	100.00	
26			0	0	0	100.00	
27			0	0	0	100.00	
28			0	0	0	100.00	
29			0	0	0	100.00	
30			0	0	0	100.00	
31			0	0	0	100.00	
32			0	0	0	100.00	
33			0	0	0	100.00	
34			0	0	0	100.00	
35			0	0	0	100.00	
36			0	0	0	100.00	
37			0	0	0	100.00	
38			0	0	0	100.00	
39			0	0	0	100.00	
40			0	0	0	100.00	
41			0	0	0	100.00	
42			0	0	0	100.00	
43			0	0	0	100.00	
44			0	0	0	100.00	
45			0	0	0	100.00	
46			0	0	0	100.00	
47			0	0	0	100.00	
48			0	0	0	100.00	
49			0	0	0	100.00	
50			0	0	0	100.00	



WHEAT AFTER FALLOW - HOOSFIELD

Comparison of a Three-Year Fallow with a One-Year Fallow

The land has been unmanured since 1851. There are two  $\frac{1}{2}$ -acre strips, each divided into four parts, and the strips are fallowed in alternate years. In 1932 and after, one quarter of the strip in crop has also been fallowed, different quarters being selected in successive years, thus providing in every year from 1934 onwards a comparison of the effect of a three-year fallow with the effect of a one-year fallow. Half the experiment is under wheat after a one-year fallow, so that continuity with previous results is maintained.

Cropping of strips A and B

C = Crop. F = Fallow.

Year	A1	A2	A3	A4	B1	B2	B3	B4
1932, 40	F	C	C	C	F	F	F	F
1933, 41	F	F	F	F	C	C	F	C
1934, 42	C	F	C	C	F	F	F	F
1935, 43	F	F	F	F	C	C	C	F
1936, 44	C	C	F	C	F	F	F	F
1937, 45	F	F	F	F	F	C	C	C
1938, 46	C	C	C	F	F	F	F	F
1939, 47	F	F	F	F	C	F	C	C

Crop Notes

Crop Year	Date Sown	Date Harvested	Variety
1939	Oct. 24	Aug. 24	Red Standard
1940	Oct. 23	Aug. 8	Squareheads Master
1941	Oct. 28	Aug. 21	Squareheads Master
1942	Oct. 21	Aug. 17	Sherriffs "Stand Up"
1943	Oct. 15	Aug. 3	Squareheads Master
1944	Oct. 8	Aug. 10	Red Standard
1945	Oct. 30	Aug. 11	Red Standard
1946	Oct. 15	Aug. 16	Squareheads Master 13/4
1947	Oct. 18	Aug. 12	Squareheads Master 13/4



A/3.2

Yields: cwt per acre

Year	Total Grain			Mean	Total Straw*			Mean
	After 1 year fallow	After 3 years fallow	After 3 years fallow		After 1 year fallow	After 3 years fallow	After 3 years fallow	
1939	B3 12.5	B4 9.7	B1 11.2	11.1	B3 20.1	B4 16.2	B1 19.6	18.6
1940	A2 11.4	A3 12.2	A4 12.3	12.0	A2 17.9	A3 16.3	A4 18.2	17.5
1941	B4 6.9	B1 7.9	B2 9.3	8.0	B4 10.9	B1 12.0	B2 14.8	12.6
1942	A3 12.4	A4 10.6	A1 14.1	12.4	A3 16.3	A4 16.0	A1 20.0	17.4
1943	B1 14.9	B2 16.5	B3 19.7	17.0	B1 21.6	B2 23.9	B3 29.3	24.9
1944	A4 13.6	A1 17.4	A2 15.0	15.3	A4 18.2	A1 23.9	A2 20.4	20.8
1945	B2 11.2	B3 9.5	B4 9.9	10.2	B2 18.0	B3 16.7	B4 16.6	17.1
1946	A1 11.1	A2 9.9	A3 11.2	10.7	A1 23.1	A2 21.4	A3 26.0	23.5
1947	B3 6.2	B4 5.3	B1 8.9	6.8	B3 8.5	B4 8.1	B1 11.6	9.4

\*Includes straw, cavings and chaff.



A/4.1

CROPS GROWN IN ROTATION - AGDELL FIELD

The experiment, which began in 1848, compares two crop rotations, one with clover and the other with fallow, and the effect of mineral manure with and without nitrogen applied to the root crops.

Area of each plot, 2/5 acre.

Rotations: Turnips or swedes, barley, clover or beans, wheat.  
Turnips or swedes, barley, fallow, wheat.

Until 1904, half of each plot of turnips was fed on the land, the remainder being carted off. Subsequently all the roots were carted.

Treatments and rates of dressing.

Applied to the root crops only (all amounts per acre):

None;

Mineral manure, with no nitrogen: Superphosphate, 84 lb.  $P_2O_5$ ;  
Sulphate of potash, 245 lb.  $K_2O$ ; sulphate of soda, 100 lb;  
sulphate of magnesia, 200 lb.

Complete mineral and nitrogenous manure: As above, together with sulphate of ammonia, 43 lb. N and 2,000 lb. castor bean meal or rape dust.  
~~per acre.~~

Crop Notes.

Year	Crop	Sown	Harvested	Variety
1939	Wheat	Oct. 27, 1938	Aug. 15	Red Standard
1940	Turnips	May 31	Nov. 28	Bruce
1941	Barley	March 19	Sept. 10	Plumage Archer
1942	Clover	May 9, 1941	June 29	Montgomery Red
1943	Wheat	Oct. 15, 1942	Aug. 2	Red Standard
1944	Swedes	June 23	Nov. 5	Mixed seed
1945	Barley	March 9	Aug. 14	Plumage Archer
1946	Clover	April 6, 1945	June 24	Montgomery Red
1947	Winter wheat	Nov. 6, 1946	Aug. 12	Squareheads Master 13/4
1947	Spring wheat	April 18	Aug. 21	Atle

In 1940 the turnips, especially those on plots 1 and 2, were badly attacked by Finger and Toe disease.

In 1944 three varieties of swedes and eleven varieties of turnips were sown in strips down each plot. The turnips on all plots failed, as did also the swedes on plots 5 and 6; all plots were attacked by disease, plots 3 and 4 less severely than the rest.

In 1947 the wheat wintered badly, and it was decided to resow all of plots 1, 3 and 5 and the west side of plots 2, 4 and 6 with spring wheat.





A/4.2

		Produce per acre						
Year	Crop		O		M		C	
			Unmanured since 1848		Mineral Manure No nitrogen		Complete mineral and nitrogenous manure	
			5	6	3	4	1	2
			Clover or Fallow beans		Clover or Fallow beans		Clover or Fallow beans	
Twenty-third Course								
1936	Roots (Turnips)	tons	1.22	0.47	2.69	2.55	5.63	3.26
1937	Barley							
	Grain*	cwt.	0.5	0.3	3.1	0.5	0.6	1.0
	Straw*	cwt.	3.4	2.1	2.5	4.7	2.7	3.4
1938	Clover hay	cwt.	-	8.3	-	29.1	-	26.4
1939	Wheat							
	Grain*	cwt.	14.9	11.9	18.2	22.2	12.8	20.9
	Straw*	cwt.	26.3	19.9	32.9	36.6	24.9	33.2
Twenty-fourth Course								
1940	Root (Turnips)	tons	0.52	0.14	3.96	5.09	2.76	2.71
1941	Barley							
	Grain*	cwt.	7.4	3.2	9.6	11.5	10.3	4.2
	Straw*	cwt.	11.9	10.8	16.6	20.2	12.9	18.6
1942	Clover hay	cwt.	-	10.0	-	39.9	-	32.9
1943	Wheat							
	Grain*	cwt.	19.7	17.7	24.7	27.4	21.2	27.1
	Straw*	cwt.	30.3	29.2	39.4	41.7	34.6	42.4
Twenty-fifth Course								
1944	Roots (Swedes)	tons	Failed		5.26	5.01	3.53	2.09
1945	Barley							
	Grain*	cwt.	12.4	9.5	19.8	20.9	24.9	20.6
	Straw*	cwt.	11.4	10.1	21.5	16.7	25.1	24.9
1946	Clover hay	cwt.	-	7.4	-	44.9	-	25.0
1947	Winter wheat							
	Grain*	cwt.	-	7.0	-	16.0	-	12.3
	Straw*	cwt.	-	13.3	-	24.9	-	17.3
1947	Spring wheat							
	Grain*	cwt.	12.8	10.4	20.3	18.6	18.5	16.8
	Straw*	cwt.	15.8	15.1	26.2	25.0	22.3	19.3

\*Includes straw, cavings and chaff.



A/5.1

MANGOLDS AND SUGAR BEET - BARNFIELD

Experiments on root crops have been conducted on Barnfield since 1843. White turnips were grown from 1843-1848, followed by swedes until 1870 except for three years 1853-1855 when the crop was barley. Sugar beet was grown from 1871-1875 and then in 1876 the field was established under mangolds, variety Yellow Globe, with practically the present scheme of manuring. Since 1946 four rows of sugar beet, variety Klein E, have been drilled on each plot in order to compare the growth of mangolds and sugar beet under a wide range of fertilizer treatments. The leaves of the crops are spread and ploughed in on their respective plots.

Area of each plot, 1/7 to 1/5 acre.

Symbols and amounts per acre.

Cross Dressings

- O Unmanured
- N Nitrate of soda, 86 lb. N
- A Sulphate of ammonia, 86 lb. N
- C Rape cake, (castor bean meal from 1940 onwards) 2000 lb.

Strip Dressings

- P Superphosphate, 65 lb.  $P_2O_5$
- K Sulphate of potash, 245 lb.  $K_2O$
- S Sodium chloride, 200 lb.
- M Sulphate of magnesia, 200 lb.
- Ca Calcium chloride, 190 lb; potassium nitrate, 570 lb; calcium nitrate, 100 lb.
- D Farmyard manure, 14 tons

Treatments

Strip	Strip	Cross Dressings
1 D	6 PK	O
2 DFK	7 PSM	N
4 FKSM	8 O	A
5 P	9 NKSM	AC
		C

From 1904 onwards, plot 4N has been divided, 4(a) receiving the dressing NEKSM, 4(b) receiving the dressing NPCa.

Dung is ploughed down in winter. The mineral manures, castor bean meal, and one third of the sulphate of ammonia and nitrate of soda are applied after the first cultivation but before the seed is drilled. The remaining two-thirds of the nitrogenous fertilizers are applied as a top-dressing about the time of singling.

✓



A/5.2

Crop Notes

Year	Date sown	Date lifted	Year	Date sown	Date lifted
1939	May 9	Nov. 11	1944	May 3	Nov. 16
1940	May 10	Nov. 21	1945	April 18	Oct. 26
1941	April 18	Nov. 25	1946 <sup>(1)</sup>	May 3	Nov. 20
1942	May 1	Dec. 7	1946 <sup>(2)</sup>	May 3	Nov. 11
1943	April 27	Nov. 5	1947 <sup>(1)</sup>	May 16	Oct. 31
			1947 <sup>(2)</sup>	May 16	Oct. 30

- (1) Mangolds
- (2) Sugar beet

Investigations by the Soil Microbiology Department are described by A.V.Garcia, "Contribuicoes para o conhecimento da Microbiologia do solo. Estudos sobre as bacterias autoctones e amibas de tres talhoes do campo experimental de Barnfield", Anais do Instituto Superior de Agronomia 18. (1951) 1, and by B.N.Singh, "The effect of artificial fertilizers and dung on the numbers of amoebae in Rothamsted soils", J.Gen.Microbiol., 3, (1949) 204.



A/5.3

Mangolds and Sugar Beet - Barnfield

Mangolds

Strip Dressing	Roots: tons per acre					Leaves: tons per acre				
	O	N	A	AC	C	O	N	A	AC	C
1939										
1 D	10.86	18.69	16.87	23.55	22.18	3.17	4.63	4.30	5.39	5.23
2 DPK	14.07	22.14	19.06	28.67	24.00	3.46	5.03	4.65	6.09	5.00
4 FKSM	3.62	18.05	15.42	25.60	18.99	1.20	4.09	3.54	5.71	3.72
4(b)PCa		17.76					4.82			
5 P	3.69	19.18	10.16	12.00	12.45	1.17	4.50	3.50	4.06	3.74
6 PK	3.07	17.41	15.91	23.09	17.76	0.95	4.34	3.25	5.62	3.72
7 FSM	3.51	19.35	18.19	23.90	20.76	1.10	4.63	3.70	4.92	4.29
8 O	2.29	9.71	6.48	10.03	10.31	0.92	3.57	2.90	3.91	3.98
9 NKSM	17.10	-	-	-	-	3.68	-	-	-	-
1940										
1 D	15.03	25.82	20.64	23.65	23.77	2.44	4.61	4.30	4.62	3.78
2 DPK	18.11	30.35	27.17	30.61	26.37	2.82	6.03	5.40	5.75	4.17
4 FKSM	4.43	21.81	18.51	28.19	22.65	1.13	4.38	3.47	5.21	3.86
4(b)PCa		21.85					4.56			
5 P	4.64	19.91	12.69	15.60	14.64	0.91	2.92	2.91	4.17	3.29
6 PK	4.33	20.67	16.31	26.09	20.24	0.86	2.84	2.41	4.43	3.17
7 FSM	3.87	22.42	18.52	21.48	21.79	0.99	4.29	3.93	5.71	4.75
8 O	5.53	17.73	10.30	12.11	13.22	1.02	3.90	3.20	4.01	3.49
9 NKSM	19.54	-	-	-	-	3.02	-	-	-	-
1941										
1 D	3.63	13.97	12.10	18.17	15.68	0.87	4.27	3.54	4.37	3.80
2 DPK	4.49	17.28	19.35	22.67	20.60	1.29	4.45	4.41	5.02	4.04
4 FKSM	0.12	8.54	9.40	19.39	17.12	0.08	2.90	2.91	4.15	3.02
4(b)PCa		6.03					2.18			
5 P	0.24	8.30	8.48	11.22	12.39	0.18	2.06	2.76	3.57	3.12
6 PK	0.43	8.59	12.42	15.29	15.16	0.25	1.91	2.50	3.72	2.87
7 FSM	0.16	6.47	10.20	18.57	15.89	0.12	1.65	2.55	4.06	3.26
8 O	0.70	3.50	2.61	3.06	2.97	0.34	1.54	1.46	0.91	1.16
9 NKSM	11.81	-	-	-	-	2.56	-	-	-	-
1942										
1 D	10.38	25.31	20.02	24.00	21.09	1.83	3.13	3.30	3.47	2.35
2 DPK	15.55	31.06	29.16	32.34	27.36	2.10	4.45	4.09	4.67	3.35
4 FKSM	1.64	24.04	22.56	31.08	24.95	0.32	3.60	2.84	4.28	2.30
4(b)PCa		22.93					4.31			
5 P	1.97	17.43	8.40	6.40	9.92	0.66	2.45	2.94	1.66	2.69
6 PK	1.14	20.81	18.62	23.46	19.62	0.34	2.98	1.88	3.74	2.01
7 FSM	0.75	22.25	17.77	18.74	19.94	0.10	3.77	2.54	3.03	3.33
8 O	2.40	15.78	8.61	6.10	8.17	0.78	4.13	2.69	2.45	2.79
9 NKSM	20.98	-	-	-	-	2.84	-	-	-	-



A/5.4

Mangolds

Strip Dressing	Roots: tons per acre					Leaves: tons per acre				
	0	N	A	AC	C	0	N	A	AC	C
1943										
1 D	12.58	25.71	19.14	30.08	28.10	3.71	6.43	4.89	7.36	4.67
2 DPK	14.14	22.34	21.55	32.26	25.69	3.91	6.39	6.65	6.90	5.70
4 FKSM	2.28	11.24	12.79	29.92	18.27	1.08	7.12	4.53	6.97	5.82
4(b)PCa		13.36					6.36			
5 P	3.13	12.89	11.69	12.44	14.07	1.32	5.33	3.47	5.70	5.21
6 PK	2.18	17.64	15.84	27.85	19.47	0.66	4.21	3.62	6.17	3.47
7 FSM	1.86	17.85	13.72	22.91	23.06	0.68	6.09	4.67	6.17	5.43
8 0	1.82	17.52	10.85	11.47	12.21	1.05	5.26	4.21	7.88	5.24
9 NKSM	19.97	-	-	-	-	4.57	-	-	-	-
1944										
1 D	8.59	14.62	13.79	14.09	10.34	3.77	5.24	4.89	5.63	5.82
2 DPK	9.85	12.40	13.85	20.86	18.34	4.01	5.43	4.40	7.58	6.56
4 FKSM	1.48	8.06	6.76	16.30	9.53	0.76	4.31	3.91	6.51	4.40
4(b)PCa		9.16					3.96			
5 P	0.91	3.61	1.96	4.98	5.45	1.08	2.89	2.57	3.28	3.87
6 PK	1.27	7.16	8.31	19.66	14.17	1.13	4.26	4.99	5.99	3.62
7 FSM	1.31	4.70	4.88	16.27	14.18	0.95	3.16	3.28	6.19	4.75
8 0	0.44	5.69	2.67	5.71	5.21	0.61	3.87	2.59	4.35	4.06
9 NKSM	12.25	-	-	-	-	4.33	-	-	-	-
1945										
1 D	12.18	22.31	17.82	30.10	25.36	3.65	3.74	5.48	4.89	4.70
2 DPK	14.06	21.36	17.59	34.63	26.68	3.69	5.95	4.26	6.02	4.89
4 FKSM	3.61	16.99	18.09	32.45	20.52	1.52	5.82	6.21	7.12	4.09
4(b)PCa		15.57					5.33			
5 P	3.02	9.19	11.51	15.11	15.66	0.95	2.84	2.91	4.48	2.96
6 PK	3.20	14.41	14.47	33.32	24.51	1.20	5.31	3.89	5.21	3.06
7 FSM	2.98	10.43	13.53	21.36	20.83	0.81	3.96	5.02	4.53	4.45
8 0	3.19	12.16	8.06	13.41	15.51	1.08	5.19	4.01	2.76	3.43
9 NKSM	22.91	-	-	-	-	4.35	-	-	-	-
1946										
1 D	8.16	19.30	14.73	12.09	16.12	1.49	4.77	4.87	4.31	4.84
2 DPK	9.13	20.00	17.97	13.31	18.92	2.72	6.14	5.19	5.82	4.28
4 FKSM	2.14	12.76	8.72	16.20	13.50	7.29	4.87	2.98	4.01	3.77
4(b)PCa		15.35					4.72			
5 P	1.14	10.47	3.20	13.70	11.51	3.82	3.77	1.76	2.91	2.42
6 PK	1.50	9.02	8.97	28.85	13.54	3.57	2.25	3.28	4.48	3.57
7 FSM	1.46	12.02	8.58	11.19	9.75	3.28	3.65	2.52	4.50	2.40
8 0	1.46	4.03	2.71	12.69	13.33	3.07	1.49	2.25	2.25	3.33
9 NKSM	8.48	-	-	-	-	3.25	-	-	-	-



A/5.5

Mangolds and Sugar Beet - Barnfield

Strip Dressings	Roots: tons per acre Cross Dressings					Leaves: tons per acre Cross Dressings				
	0	N	A	AC	C	0	N	A	AC	C
1947 Mangolds										
1 D	6.41	11.29	10.91	10.01	10.01	1.79	2.10	1.91	2.18	2.79
2 DPK	9.54	14.39	12.29	12.87	13.15	1.44	3.11	2.62	3.45	2.40
4 PKSM	3.10	10.57	7.29	7.86	9.84	1.44	2.62	2.25	2.45	2.45
4(b) PCa		11.52					2.18			
5 P	1.93	8.60	1.63	2.64	3.69	0.69	1.83	0.64	0.83	1.57
6 PK	2.27	7.76	6.07	7.36	6.88	0.61	2.45	1.61	2.23	2.35
7 PSM	1.89	8.22	7.11	5.25	4.49	0.59	2.37	1.93	1.83	1.57
8 0	0.57	0.71	0.42	3.51	3.67	0.44	0.59	0.49	0.98	1.13
9 NKSM	3.67	-	-	-	-	1.79	-	-	-	-
1946 Sugar beet										
	Roots (washed): tons per acre					Tops: tons per acre				
2 DPK	6.01	7.24	6.41	13.28	9.20	5.82	12.48	8.71	15.71	12.09
4 PKSM	1.27		5.06	8.54	6.80	2.69		4.26	10.42	5.97
4(b) PCa		8.12					9.39			
5 P	1.24	7.19	1.59	11.11	6.95	3.91	10.86	2.50	10.62	5.24
6 PK	1.17	6.39	4.89	9.59	10.13	2.40	9.54	3.77	15.02	7.93
7 PSM	1.43	7.66	5.50	6.12	8.32	3.62	6.85	5.63	12.09	12.87
8 0	0.38	2.79	2.10	8.12	7.24	1.50	4.11	2.50	11.35	11.06
1947										
1 D	6.28	7.65	7.60	6.34	8.02	4.65	6.41	6.46	5.48	7.19
2 DPK	4.92	7.05	5.65	6.26	8.24	5.97	6.56	5.72	5.58	6.70
4 PKSM	1.90		5.59	6.53	6.23	1.22		5.33	7.29	4.70
4(b) PCa		7.49					5.48			
5 P	2.28	5.65	1.90	3.01	4.06	1.03	6.80	2.50	3.13	3.91
6 PK	1.35	5.66	4.04	6.84	6.20	1.32	6.46	2.54	7.00	4.21
7 PSM	1.75	5.87	4.43	3.88	4.64	1.47	7.05	3.82	5.28	4.26
8 0	1.55	1.86	0.49	1.38	1.28	1.37	2.50	1.17	3.23	3.57

No Sugar beet was grown on strip 1 in 1946.



Mammals and Birds - 1907-1917

Year	Sex	Mammals (number) - total per year									
		1	2	3	4	5	6	7	8	9	10
1907	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1908	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1909	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1910	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1911	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1912	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1913	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1914	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1915	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1916	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1
1917	1	1	1	1	1	1	1	1	1	1	1
	2	1	1	1	1	1	1	1	1	1	1
	3	1	1	1	1	1	1	1	1	1	1
	4	1	1	1	1	1	1	1	1	1	1
	5	1	1	1	1	1	1	1	1	1	1
	6	1	1	1	1	1	1	1	1	1	1
	7	1	1	1	1	1	1	1	1	1	1
	8	1	1	1	1	1	1	1	1	1	1
	9	1	1	1	1	1	1	1	1	1	1
	10	1	1	1	1	1	1	1	1	1	1



HAY - THE PARK GRASS PLOTS

Long period effects of fertilizers and manures on the yield and botanical composition of meadow hay

This field has been under grass for centuries. The experimental treatments were first applied in 1856. Until 1874 the aftermath was grazed by sheep, but since then a second cut of hay has been taken in late summer, and no stock has been admitted.

In 1903 most of the plots were divided, the southern halves receiving 18 cwt. of ground lime per acre, every fourth year.

Most plots are  $\frac{1}{4}$  acre, but the sizes range from  $\frac{1}{2}$  to  $\frac{1}{12}$  acre.

The experiment is discussed, and early departures from the present manuring system described, by R.O.Cashen, J.Agric.Sci., 37, (1947), 1.

Plot		Treatments (all amounts per acre)
1	N <sub>1</sub>	Sulphate of ammonia (43 lb.N); (with dung (14 tons) also, 1856-63).
2	O	Unmanured, following dung (14 tons), 1856-63.
3	O	Unmanured.
4-1	P	Superphosphate (65 lb. P <sub>2</sub> O <sub>5</sub> ).
4-2	N <sub>2</sub> P	Sulphate of ammonia (86 lb.N), superphosphate (65 lb.P <sub>2</sub> O <sub>5</sub> ).
5-1	O	Unmanured, following ammonium salts (86 lb.N), 1856-97.
5-2	PK	Superphosphate (65 lb. P <sub>2</sub> O <sub>5</sub> ), sulphate of potash (245 lb. K <sub>2</sub> O), following ammonium salts (86 lb.N) 1856-97.
6	PKM	Complete minerals as Plot 7, following ammonium salts (86 lb. N), 1856-68.
7	PKM	Complete minerals: Superphosphate (65 lb. P <sub>2</sub> O <sub>5</sub> ). Sulphate of potash (245 lb. K <sub>2</sub> O). Sulphate of soda (100 lb.) Sulphate of magnesia (100 lb.)
8	FM	Complete minerals without sulphate of potash.
9	N <sub>2</sub> PKM	Complete minerals, with sulphate of ammonia (86 lb. N).
10	N <sub>2</sub> FM	Complete minerals, without sulphate of potash; with sulphate of ammonia (86 lb. N).



A/6.2

Plot		
11-1	N <sub>3</sub> PKM	Complete minerals, with sulphate of ammonia (129 lb. N).
11-2	N <sub>3</sub> PKMS	As plot 11-1, with silicate of soda (400 lb.) since 1862.
12	O	Unmanured.
13	DF	Dung (14 tons) in 1905 and every fourth year since (omitted in 1917), fish guano (6 cwt.) in 1907 and every fourth year since; following complete minerals with ammonium salts (86 lb. N), 1856-1904.
14	N <sub>2</sub> 'PKM	Complete minerals, with nitrate of soda (86 lb. N).
15	PKM	Complete minerals, following nitrate of soda (86 lb. N), 1858-63.
16	N <sub>1</sub> 'PKM	Complete minerals, with nitrate of soda (43 lb. N).
17	N <sub>1</sub> '	Nitrate of soda (43 lb. N).
18	N <sub>2</sub> KM	Complete minerals without superphosphate, with sulphate of ammonia (86 lb. N); following minerals and ammonium salts supplying the constituents of 1 ton of hay, 1865-1904.
19	D	Dung (14 tons) in 1905 and every fourth year since except 1917, following nitrate of soda (43 lb. N), superphosphate (65 lb. P <sub>2</sub> O <sub>5</sub> ) and sulphate of potash (142 lb. K <sub>2</sub> O), 1872-1904.
20	D;C	Dung (14 tons) in 1905 and every fourth year since except in 1917; in each intervening year nitrate of soda (27 lb. N), superphosphate (33 lb. P <sub>2</sub> O <sub>5</sub> ) and sulphate of potash (49 lb. K <sub>2</sub> O); following superphosphate (66 lb. P <sub>2</sub> O <sub>5</sub> ) and nitrate of potash (327 lb.), 1872-1904.

Ground lime was applied to the southern portion (limed) of the plots at the rate of 2,000 lb. per acre in the winters of 1903-4, 1907-8, 1915-16, 1923-24, 1927-28, 1931-32, 1935-36, 1939-40, 1943-44 and at the rate of 2,500 lb. per acre in the winter of 1920-21, except on plots 18, 19 and 20, where part received light liming and part heavy liming as follows (weights in lb. per acre):-

Plot	Light liming (LL)	Heavy Liming (HL)
18	3,951	6,788
19	570	3,150
20	570	2,772



A/6.3

Hay - Park Grass

Dung and lime are applied in winter, minerals as early in spring as possible, and nitrogenous fertilizers in March. On plots 11-1, 11-2 and 16 the nitrogenous fertilizer is given in two dressings one month apart.

Dates of cutting					
Year	1st cut	2nd cut	Year	1st cut	2nd cut
1939	July 1	Sept. 28	1944	June 21	Nov. 22
1940	June 20	Jan. 1941	1945	June 19	Nov. 9
1941	June 25	Oct. 1	1946	June 22	Dec. 24
1942	June 10	Sept. 19	1947	June 13	Sept. 2
1943	June 21	Nov. 25			

The second crop is carted green, and hay yields are estimated from the dry matter.



A/6.4

Yield of hay: cwt. per acre

x 11.8

Plot	1939						1940					
	Not limed			Limed			Not limed			Limed		
	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total
1	8.4	16.8	25.2	20.4	11.8	32.2	10.6		10.6	16.0		16.0
2	13.0	11.4	24.4	13.8	9.0	22.8	13.0		13.0	14.5		14.5
3	11.1	9.9	21.0	12.8	6.5	19.3	13.6		13.6	14.5		14.5
4-1	19.0	14.4	33.4	17.7	10.6	28.3	14.7		14.7	16.0		16.0
4-2	12.2	20.2	32.4	29.6	12.0	41.6	14.1		14.1	27.9		27.9
5-1	9.5	9.1	18.6	-	-	-	9.6		9.6	-		-
5-2	20.9	12.9	33.8	-	-	-	21.9		21.9	-		-
6	32.9	20.9	53.8	-	-	-	22.4		22.4	-		-
7	35.5	23.6	59.1	41.1	26.2	67.3	24.2		24.2	33.3		33.3
8	20.7	12.0	32.7	14.3	10.9	25.2	16.5		16.5	19.4		19.4
9	32.8	26.6	59.4	54.0	22.5	76.5	36.7	3.8	40.5	39.3	1.2	40.5
10	23.8	17.2	41.0	43.6	19.0	62.6	16.7		16.7	31.1	1.2	32.3
11-1	25.6	29.2	54.8	54.8	31.8	86.6	31.3	18.2	49.5	48.9	6.6	55.5
11-2	36.1	28.0	64.1	56.8	35.2	92.0	40.8	17.8	58.6	51.6	9.4	61.0
12	15.0	9.6	24.6	-	-	-	11.5		11.5			
13	37.5	23.4	60.9	32.0	20.5	52.5	27.7	2.0	29.7	24.1	0.9	25.0
14	52.4	23.1	75.5	52.3	19.1	71.4	51.5	2.6	54.1	48.6	1.1	49.7
15	20.0	15.1	35.1	31.1	17.8	48.9	18.0		18.0	28.5		28.5
16	39.5	19.4	58.9	37.4	19.4	56.8	35.7	1.6	37.3	39.3	0.6	39.9
17	17.8	12.9	30.7	21.8	9.0	30.8	19.8		19.8	25.9		25.9
18	12.1	17.1	29.2	29.5*	9.6*	39.1*	6.8	2.9	9.7	24.3*		24.3*
				25.7†	8.2†	33.9†				20.2†		20.2†
19	25.0	18.1	43.1	26.7*	17.4*	44.1*	27.2		27.2	23.8*		23.8*
				25.8†	16.0†	41.8†				23.4†		23.4†
20	37.6	19.2	56.8	36.1*	22.4*	58.5*	33.5		33.5	38.4*		38.4*
				33.2†	18.1†	51.3†				35.0†		35.0†

\* Heavy liming.

† Light liming.



A/6.5

Hay - Park Grass

Yield of hay: cwt. per acre

Plot	1941						1942					
	Not limed			Limed			Not limed			Limed		
	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total
1	6.7	6.3	13.0	18.5	5.5	24.0	5.8	4.0	9.8	15.0	4.1	19.1
2	11.4	6.6	18.0	11.7	5.8	17.5	4.0	1.8	5.8	7.3	1.2	8.5
3	9.8	7.1	16.9	12.5	11.9	24.4	3.3	0.6	3.9	5.8	0.6	6.4
4-1	17.3	6.4	23.7	14.7	7.3	22.0	8.5	0.9	9.4	8.7	1.4	10.1
4-2	10.8	4.6	15.4	23.7	4.0	27.7	15.0	4.8	19.8	27.2	3.6	30.8
5-1	6.5	6.2	12.7	-	-	-	7.5	1.4	8.9	-	-	-
5-2	12.8	8.8	21.6	-	-	-	13.6	4.6	18.2	-	-	-
6	21.4	13.8	35.2	-	-	-	8.1	4.8	12.9	-	-	-
7	27.8	20.3	48.1	31.4	14.6	46.0	25.5	4.8	30.3	35.4	3.0	38.4
8	19.4	15.8	35.2	13.6	13.4	27.0	12.2	2.6	14.8	9.7	1.9	11.6
9	15.8	6.7	22.5	39.4	16.6	56.0	46.6	13.8	60.4	40.2	3.8	44.0
10	13.1	14.1	27.2	28.7	10.6	39.3	11.8	7.4	19.2	29.4	4.6	34.0
11-1	9.4	24.0	33.4	45.0	24.3	69.3	35.6	25.1	60.7	45.8	6.4	52.2
11-2	31.2	29.2	60.4	50.5	34.0	84.5	46.6	23.8	70.4	54.2	8.4	62.6
12	11.4	8.5	19.9	-	-	-	7.2	2.8	10.0	-	-	-
13	29.2	32.6	61.8	25.2	20.6	45.8	32.6	3.1	35.7	21.8	2.1	23.9
14	52.6	16.3	68.9	50.8	9.2	60.0	52.4	6.5	58.9	46.9	6.0	52.9
15	19.3	9.6	28.9	29.9	7.7	37.6	14.7	2.8	17.5	23.6	1.2	24.8
16	30.8	10.7	41.5	33.9	8.3	42.2	33.3	3.6	36.9	35.2	3.4	38.6
17	19.3	7.0	26.3	21.4	3.8	25.2	12.5	5.2	17.7	22.2	2.9	25.1
18	7.2	12.8	20.0	22.1*	7.2*	29.3*	7.8	4.5	12.3	21.3*	1.6*	22.9*
				21.1†	7.0†	28.1†				24.3†	2.2†	26.5†
19	30.9	15.5	46.4	28.9*	14.7*	43.6*	22.5	5.1	27.6	23.5*	4.9*	28.4*
				31.3†	17.9†	49.2†				25.5†	2.9†	28.4†
20	30.4	14.6	45.0	31.9*	13.8*	45.7*	34.0	4.2	38.2	37.7*	2.9*	40.6*
				28.9†	11.0†	39.9†				40.7†	4.9†	45.6†

\* Heavy liming.

† Light liming.

N



Yield of hay: cwt. per acre

Plot	1943						1944					
	Not limed			Limed			Not limed			Limed		
	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total
1	8.4	-	8.4	13.8	-	13.8	0.7	-	0.7	5.4	-	5.4
2	11.4	-	11.4	9.9	-	9.9	3.8	-	3.8	2.0	-	2.0
3	10.9	-	10.9	9.8	-	9.8	3.5	-	3.5	2.8	-	2.8
4-1	11.9	-	11.9	11.6	-	11.6	5.6	-	5.6	3.4	-	3.4
4-2	13.8	0.5	14.3	28.7	1.6	30.3	0.5	-	0.5	10.7	3.0	13.7
5-1	8.4	0.5	8.9	-	-	-	3.4	1.4	4.8	-	-	-
5-2	14.2	1.9	16.1	-	-	-	7.4	3.4	10.8	-	-	-
6	22.6	2.4	25.0	-	-	-	18.3	4.6	22.9	-	-	-
7	27.5	2.5	30.0	33.7	1.1	34.8	16.8	6.5	23.3	32.0	6.9	38.9
8	22.9	1.1	24.0	17.0	0.5	17.5	8.9	2.4	11.3	6.5	1.0	7.5
9	54.7	9.1	63.8	43.7	3.5	47.2	24.0	15.9	39.9	28.2	6.4	34.6
10	22.5	4.4	26.9	33.7	3.0	36.7	7.6	7.2	14.8	18.2	4.0	22.2
11-1	61.9	15.5	77.4	54.4	69.8	64.2	18.5	31.5	50.0	48.6	12.2	60.8
11-2	73.9	13.8	87.7	56.7	11.9	68.6	37.2	25.8	63.0	45.3	15.6	60.9
12	16.7	10.6	17.3	-	-	6.5	6.5	-	6.5	-	-	-
13	30.9	4.9	35.8	28.8	1.8	30.6	17.5	4.8	22.3	20.8	-	20.8
14	47.4	3.0	50.4	46.1	2.1	48.2	30.7	6.9	37.6	12.1	4.0	16.1
15	17.8	-	17.8	27.6	-	27.6	4.5	2.8	7.3	7.7	1.4	9.1
16	31.5	-	31.5	33.8	0.5	34.3	15.5	3.2	18.7	18.2	3.6	21.8
17	16.8	-	16.8	19.1	-	19.1	4.2	-	4.2	3.9	1.1	5.0
18	15.7	1.9	17.6	36.2*	-	36.2*	5.0	4.1	9.1	19.0*	2.1*	21.1*
				29.8†	-	29.8†				12.7†	2.5†	15.2†
19	25.1	-	25.1	19.1*	-	19.1*	11.9	6.8	18.7	9.7*	4.4*	14.1*
				21.8†	-	21.8†				11.4†	4.2†	15.6†
20	38.0	1.1	39.1	33.7*	0.5*	34.2*	20.3	5.5	25.8	17.4*	2.9*	20.3*
				38.4†	2.0†	40.4†				23.0†	3.6†	26.6†

\* Heavy liming.

† Light liming.



A/6.7

Hay - Park Grass

Yield of hay: cwt per acre

Plot	1945						1946					
	Not limed			Limed			Not limed			Limed		
	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total
1	6.0	4.0	10.0	17.7	2.2	19.9	13.6	6.4	20.0	20.3	3.7	24.0
2	11.8	-	11.8	10.5	-	10.5	12.9	3.0	15.9	14.2	2.3	16.5
3	11.9	-	11.9	11.1	-	11.1	12.3	3.6	15.9	12.8	1.8	14.6
4-1	17.2	1.2	18.4	16.0	0.6	16.6	16.5	3.3	19.8	14.3	3.8	18.1
4-2	15.9	1.5	17.4	26.9	1.5	28.4	19.2	6.1	25.3	43.5	7.9	51.4
5-1	6.7	1.4	8.1	-	-	-	7.3	2.4	9.7	-	-	-
5-2	16.6	3.9	20.5	-	-	-	11.7	5.8	17.5	-	-	-
6	33.5	11.5	45.0	-	-	-	26.2	11.2	37.4	-	-	-
7	30.4	10.0	40.4	48.8	10.1	58.9	22.5	11.0	33.5	52.2	11.9	64.1
8	26.8	5.6	32.4	19.7	3.8	23.5	20.2	8.4	28.6	13.8	6.5	20.3
9	38.2	15.5	53.7	42.2	4.0	46.2	19.5	24.2	43.7	40.5	11.5	52.0
10	30.9	6.9	37.8	34.1	3.4	37.5	18.5	13.4	31.9	30.6	9.0	39.6
11-1	30.0	19.1	49.1	53.5	7.0	60.5	30.6	3.4	34.0	48.1	20.6	68.7
11-2	44.8	23.0	67.8	54.9	10.8	65.7	32.0	3.2	35.2	52.5	2.0	54.5
12	16.8	2.8	19.6	-	-	-	11.1	6.0	17.1	-	-	-
13	37.9	9.1	47.0	52.3	13.8	66.1	24.4	14.2	38.6	36.7	10.4	47.1
14	49.7	11.8	61.5	52.8	6.8	59.6	52.5	12.9	65.4	54.7	11.4	66.1
15	22.0	8.2	30.2	30.2	6.5	36.7	21.3	7.4	28.7	25.9	5.6	31.5
16	17.5	6.2	23.7	34.6	7.9	42.5	35.8	9.3	45.1	37.7	10.8	48.5
17	28.0	7.5	35.5	26.0	5.2	31.2	24.9	7.1	32.0	23.2	5.8	29.0
18	17.0	4.0	21.0	33.2*	-	33.2*	6.5	13.8	20.3	21.9*	3.8*	25.7*
				32.0†	-	32.0†				19.5†	6.7†	26.2†
19	40.3	10.1	50.4	38.8*	5.0*	43.8*	28.7	10.9	39.6	27.4*	7.4*	34.8*
				41.2†	5.5†	46.7†				31.9†	8.2†	40.1†
20	38.6	5.2	43.8	40.6*	3.1*	43.7*	43.5	10.7	54.2	46.6*	7.2*	53.8*
				42.7†	8.8†	51.5†				51.1†	11.9†	63.0†

\* Heavy liming.

† Light liming.



A/6.8

Yield of hay: cwt per acre

Plot	1947					
	Not Limed			Limed		
	1st Crop	2nd Crop	Total	1st Crop	2nd Crop	Total
1	9.0	3.9	12.9	23.2	6.0	29.2
2	18.4	1.1	19.5	21.2	4.2	25.4
3	19.1	1.4	20.5	20.4	2.1	22.5
4-1	24.8	2.6	27.4	23.4	3.4	26.8
4-2	15.4	5.9	21.3	19.9	7.8	27.7
5-1	13.3	1.6	14.9	-	-	-
5-2	28.2	5.0	33.2	-	-	-
6	40.3	8.9	49.2	-	-	-
7	41.2	8.2	49.4	51.4	9.2	60.6
8	29.4	6.0	35.4	24.6	4.6	29.2
9	20.2	22.2	42.4	30.1	9.0	39.1
10	18.0	10.8	28.8	26.4	8.5	34.9
11-1	9.8	22.2	32.0	44.1	11.9	56.0
11-2	18.3	30.9	49.2	52.1	17.2	69.3
12	22.1	3.0	25.1	-	-	-
13	33.8	7.6	41.4	43.2	13.1	56.3
14	45.8	13.8	59.6	40.2	12.0	52.2
15	33.5	6.0	39.5	45.3	7.0	52.3
16	34.9	9.5	44.4	41.2	9.5	50.7
17	23.1	7.4	30.5	26.9	6.8	33.7
18	15.5	3.9	19.4	32.4*	10.5*	42.9*
				28.9†	9.8†	38.7†
19	29.8	6.6	36.4	33.8*	5.2*	39.0*
				33.6†	5.2†	38.8†
20	41.9	8.0	49.9	42.9*	7.1*	50.0*
				37.4†	9.9†	47.3†

\* Heavy liming.

† Light liming.

2

34



K

A/6.9

Hay - Park Grass

Sp. No.	Botanical Composition per cent. 1st Crop										Plot 4 <sup>1</sup>	
	Plot 1								Plot 2		1949	
	1939		1940		1947		1948		1949		U	L
	U	L	U	L	U	L	U	L	U	L	U	L
1	52.4	3.7	24.1	3.2	76.0	1.1	75.3	1.5	10.0	0.5	2000	0.4
3	0.2	4.0	0.2	4.0	0.2	1.4	0.1	2.5	9.6	4.1	2.2	2.4
4	0.7	2.4	0.9	5.6	0.3	6.0	0.2	1.4	1.1	0.4	3.4	1.1
5	0.1	2.2	0.1	0.8	0.2	4.2	-	3.0	0.4	0.2	7.3	0.1
6	-	2.2	-	2.4	-	1.3	-	1.7	0.2	1.5	0.9	2.7
7	-	34.7	-	27.7	0.3	27.4	0.2	12.1	3.5	22.5	5.5	18.1
8	-	-	-	-	-	-	-	-	1.8	3.9	0.5	1.8
9	-	-	-	0.1	-	-	-	-	-	-	0.1	-
11	0.8	13.0	0.2	12.2	2.0	15.9	3.2	18.3	7.9	7.5	7.1	4.9
12	40.9	15.2	72.2	19.3	14.0	6.1	15.6	15.4	15.5	7.4	9.1	3.6
13	-	-	-	-	-	-	-	-	0.1	-	0.3	1.1
14	-	3.5	0.1	3.3	-	5.9	-	5.8	3.3	2.0	6.7	4.5
15	-	-	-	-	-	-	-	-	-	0.1	0.3	-
16	0.2	2.3	0.2	2.5	-	1.3	-	1.3	0.1	1.0	0.9	1.6
17	-	0.2	-	0.9	-	0.3	-	0.3	-	0.3	0.5	1.8
51	-	1.5	-	1.7	-	1.9	-	2.0	2.2	2.4	3.0	7.3
52	-	0.5	-	0.6	-	1.2	-	2.4	9.4	9.9	3.8	7.7
53	-	-	-	-	-	-	-	-	-	-	2.4	-
54	-	0.1	-	0.2	-	0.6	-	0.2	3.6	4.8	2.3	4.9
55	-	-	-	-	-	-	-	-	0.4	0.7	2.9	2.5
101	-	1.1	-	1.2	-	1.1	-	0.8	0.9	2.8	3.8	2.3
104	-	0.2	-	0.1	-	0.3	-	0.6	0.2	0.3	0.4	-
105	-	-	-	-	-	-	-	-	0.1	-	-	-
106	-	-	-	-	-	-	-	-	-	0.6	-	-
109	-	-	-	-	0.2	-	1.9	0.1	-	-	-	-
110	-	-	-	-	-	-	-	-	0.6	0.1	0.9	2.1
111	-	-	-	-	-	-	-	-	-	0.3	-	-
114	-	0.1	-	-	-	0.4	0.1	0.1	3.2	0.2	1.1	-
116	-	0.5	-	0.8	-	0.1	-	0.4	0.1	0.3	0.1	0.3
117	2.1	-	-	-	-	-	-	-	1.6	-	-	-
118	-	0.9	-	-	-	0.9	-	2.0	0.5	1.7	0.2	2.2
119	-	1.1	-	1.7	-	0.5	-	1.7	1.9	1.2	3.8	3.4
120	0.4	4.7	0.7	1.4	0.5	0.7	0.8	2.0	1.3	2.5	1.6	3.6
123	-	-	-	-	-	-	-	-	-	0.1	-	-
124	-	0.1	-	-	-	0.8	-	1.3	12.5	8.7	11.0	6.3
125	-	-	-	-	-	-	-	0.2	-	-	-	-
126	-	0.5	-	0.5	-	0.5	-	1.0	0.4	0.5	0.6	0.1
127	-	-	-	-	-	0.8	-	-	-	0.2	-	0.7
129	-	3.5	-	6.6	0.6	10.7	-	19.8	5.7	10.2	8.5	9.7
130	-	-	-	0.1	-	-	-	-	-	0.1	0.1	0.3
131	-	-	-	0.1	-	-	-	-	-	-	-	-
134	2.0	1.7	0.8	2.8	5.7	8.5	2.5	2.1	1.4	0.5	5.8	2.1
136	0.2	0.1	0.5	0.2	-	0.1	0.1	-	0.4	0.5	0.9	0.4
137	-	-	-	-	-	-	-	-	0.1	-	-	-

2.0

35

N



A/6.10

Botanical Composition per cent. 1st Crop

Sp. No.	1939		1940		Plot 3 1941		1947		1948		Plot 5 <sup>1</sup> 1949	Plot 5 <sup>2</sup>
	U	L	U	L	U	L	U	L	U	L		
1	7.7	1.2	12.1	2.0	1.4		8.4	1.1	15.6	0.8	17.8	7.1
2	-	-	-	-	-		-	-	-	-	0.7	-
3	2.0	3.3	2.6	7.0	4.1		2.4	2.8	7.9	6.2	0.3	9.1
4	1.7	0.3	2.8	0.9	0.3		5.1	2.6	0.6	0.7	1.1	0.1
5	-	0.2	0.7	0.6	-		0.6	0.1	0.1	0.1	0.5	1.8
6	0.3	2.0	0.2	2.0	1.2		0.6	1.9	0.2	1.2	-	-
7	5.2	16.1	5.7	18.2	18.9		3.4	13.5	2.7	13.4	0.5	3.5
8	3.1	4.9	0.9	1.5	3.2		4.7	3.6	0.2	1.0	-	-
9	0.1	-	-	-	-		-	-	-	-	-	-
10	0.1	-	0.3	0.1	0.1		-	-	-	-	-	-
11	3.0	3.1	3.5	3.7	3.7		12.1	3.5	4.5	3.3	4.1	4.7
12	11.3	4.7	19.4	7.7	8.5		10.4	3.0	16.6	4.1	55.8	11.5
14	3.5	1.8	4.6	3.1	2.6		5.3	5.0	4.3	2.5	0.7	4.1
15	-	0.1	0.1	-	-		-	-	-	-	-	-
16	-	1.3	0.1	2.2	1.8		0.3	1.6	0.2	2.1	0.7	2.6
17	-	0.3	0.1	0.7	1.2		-	0.8	-	0.3	-	-
51	0.5	1.9	0.7	2.3	3.5		2.7	2.5	0.9	2.0	-	16.8
52	4.4	10.9	6.3	13.7	9.6		3.3	5.0	3.8	7.0	3.1	5.2
54	1.6	4.7	2.2	7.0	4.1		4.9	7.5	2.3	6.4	-	1.1
55	0.1	0.3	0.3	0.3	0.5		0.1	0.2	0.3	0.7	-	1.3
56	-	-	-	-	-		-	-	-	-	-	2.1
101	0.1	2.8	0.1	1.9	1.1		1.1	8.6	0.1	3.0	-	0.3
104	0.2	0.2	0.1	0.1	0.3		0.6	0.4	0.2	0.2	-	-
105	0.01	-	0.1	-	-		-	-	0.2	-	0.2	0.1
106	-	0.8	-	0.2	0.3		-	0.1	-	0.1	-	-
109	-	0.1	-	-	-		-	-	0.3	-	-	-
110	14.6	12.6	9.1	4.1	9.8		5.0	13.4	5.6	11.7	-	-
111	-	-	-	0.3	0.1		-	0.2	-	0.4	-	-
114	2.2	0.3	1.6	-	0.1		5.7	0.9	1.6	0.1	2.0	0.1
115	-	-	-	-	-		-	-	-	-	-	0.6
116	0.3	0.6	0.3	0.6	0.4		-	0.2	0.1	0.2	-	0.3
117	-	-	0.1	-	-		0.1	-	1.1	-	0.6	-
118	1.1	3.7	0.4	3.8	3.2		0.7	2.1	0.9	2.1	1.7	0.9
119	1.4	0.7	1.9	0.8	1.0		0.9	0.5	1.3	1.0	1.6	12.8
120	2.9	1.5	1.3	0.4	0.4		0.6	0.5	1.0	2.0	2.0	5.4
122	-	-	0.1	0.1	-		-	-	-	-	-	-
123	-	-	-	-	-		-	0.1	0.1	-	0.4	-
124	18.2	9.5	12.3	7.0	6.4		12.0	8.8	17.9	12.5	1.6	0.1
126	0.1	0.2	0.2	0.4	-		0.3	0.5	0.1	0.2	-	-
127	0.3	0.1	-	-	-		0.4	0.3	0.1	-	-	-
129	11.8	7.7	6.3	5.3	9.7		3.7	6.2	6.2	13.0	2.4	0.9
130	0.1	0.3	0.3	0.6	0.6		-	0.4	0.1	0.2	-	-
131	-	-	-	0.1	-		-	-	-	-	-	-
132	-	0.1	0.6	0.1	0.1		-	-	-	-	-	-
133	-	-	0.1	-	-		-	-	0.3	-	-	-
134	1.3	1.2	0.2	0.3	1.4		3.7	1.8	2.4	1.3	1.0	5.7
136	0.3	0.4	0.6	0.8	0.3		0.3	0.2	0.1	0.2	1.2	1.8
137	0.4	0.1	1.7	0.1	0.1		0.6	0.1	0.1	-	-	-

36



X

A/6.11

Hay - Park Grass

Sp. No.	Botanical Composition per cent.											
	Plot 4 <sup>2</sup>				1st Crop Plot 10							
	1947		1949		1939		1940		1947		1948	
	U	L	U	L	U	L	U	L	U	L	U	L
1	68.8	1.8	36.2	2.2	30.4	0.9	33.9	2.1	31.3	1.9	51.9	1.9
3	0.2	32.4	0.7	24.3	0.1	63.8	0.1	50.3	0.4	25.2	0.3	28.6
4	14.5	4.6	10.0	1.2	43.7	0.9	31.5	2.9	52.4	11.3	10.3	1.8
5	-	2.3	-	2.5	1.1	3.5	0.9	7.6	5.4	2.7	5.1	4.1
7	-	-	-	0.3	-	-	-	-	-	0.1	-	-
11	-	0.1	-	0.3	0.1	0.2	0.1	0.1	0.1	0.6	0.3	-
12	9.6	29.8	35.4	57.4	0.7	22.2	2.1	26.3	2.6	43.7	10.2	54.5
14	4.8	1.0	17.5	0.1	23.9	0.2	31.3	0.2	6.6	0.6	21.6	0.5
X16	-	5.3	-	6.3	-	6.0	-	6.2	0.1	3.3	-	3.4
51	-	0.1	-	-	-	-	0.1	-	-	-	-	-
101	-	0.6	-	0.1	-	-	-	-	-	-	-	-
112	0.8	-	-	-	-	-	-	-	-	-	-	-
116	-	-	-	0.1	-	-	-	-	-	-	-	-
117	-	0.8	-	0.4	-	-	-	-	-	1.0	-	-
119	-	0.2	-	0.8	-	-	-	-	-	0.2	-	0.7
126	-	-	-	-	-	0.3	-	-	-	0.5	-	0.4
127	-	-	-	-	-	-	-	-	-	0.1	-	-
129	-	-	-	0.1	-	-	-	-	-	0.4	-	-
134	1.3	20.6	0.2	3.9	-	2.0	-	4.3	1.1	8.4	0.3	5.0
135	-	0.4	-	-	-	-	-	-	-	-	-	-

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✓



A/6.12

Sp. No.	Botanical Composition per cent. 1st Crop										
	Plot 6	Plot 7								Plot 15	
	1949	1939		1940		1947		1948		1949	
	U	U	L	U	U	L	U	L	U	L	
1	2.5	7.2	0.1	3.1	0.2	4.7	0.1	3.8	0.4	2.8	0.4
3	6.1	1.2	15.6	6.1	22.9	4.5	15.7	3.2	13.2	18.5	6.8
4	2.2	1.5	0.1	2.6	0.1	6.7	0.3	3.6	0.3	1.7	0.3
5	2.2	1.5	11.0	3.1	10.9	4.0	19.2	2.4	11.7	0.6	13.9
6	0.1	0.5	2.2	0.6	2.5	0.8	2.1	1.0	2.5	0.2	0.2
7	3.1	1.8	5.9	1.8	2.7	1.2	3.9	1.1	5.2	1.1	12.6
9	0.2	-	2.2	0.2	7.3	-	0.2	0.2	2.1	-	1.1
11	11.8	21.8	18.9	26.3	13.8	20.8	20.7	15.7	13.2	8.4	4.4
12	5.3	7.7	2.6	6.5	1.2	4.1	1.0	4.6	1.0	7.0	3.7
13	-	-	1.6	-	0.4	0.2	3.9	0.3	3.3	-	-
14	2.6	1.0	1.4	5.8	0.9	1.8	0.6	2.8	1.2	1.4	1.6
15	-	-	-	-	-	-	-	-	0.2	-	-
16	1.7	1.1	1.5	1.7	1.3	2.1	1.3	2.6	1.2	0.5	1.2
17	-	-	5.6	0.3	9.3	0.2	2.0	0.3	1.1	-	0.4
51	20.7	28.8	13.1	8.8	6.4	11.4	5.2	11.3	15.6	22.3	13.4
52	2.6	2.3	0.1	2.6	-	0.3	-	0.5	-	0.9	-
54	5.3	4.6	1.4	4.9	2.1	4.3	0.1	4.6	3.4	1.7	2.8
55	2.2	3.9	7.8	3.0	5.7	1.6	3.8	3.4	6.2	2.8	16.5
56	0.5	-	-	-	-	-	-	-	-	-	-
101	0.8	0.8	1.2	1.0	1.2	1.3	3.2	0.7	1.9	0.4	1.8
104	-	-	0.1	-	-	-	0.1	-	-	-	0.1
111	-	0.8	-	2.3	-	-	-	-	-	-	-
113	-	-	0.2	-	-	-	-	-	0.3	-	-
114	4.1	1.4	0.2	2.0	0.1	4.4	0.1	1.4	0.1	1.1	0.4
115	0.6	1.4	1.2	4.8	4.4	1.1	4.6	1.0	4.5	-	3.2
117	0.1	-	-	0.1	-	-	-	0.2	-	-	-
118	1.1	0.1	0.7	-	1.6	-	-	-	0.3	-	-
119	8.9	2.8	0.2	1.2	0.1	7.6	0.3	14.0	1.0	10.0	1.2
120	5.5	4.0	0.8	3.1	0.1	7.0	1.5	4.3	0.5	7.6	1.4
124	0.2	0.4	-	-	-	0.1	-	-	-	0.3	-
126	0.2	-	1.7	0.1	3.3	0.1	1.6	0.4	1.9	0.1	1.9
127	0.3	0.1	-	-	0.1	0.9	3.5	1.0	2.6	-	0.3
129	7.4	1.6	1.0	1.3	0.5	5.4	1.8	6.5	4.6	9.7	9.6
130	-	-	0.1	-	0.1	0.1	0.1	-	0.1	-	0.1
134	1.5	1.3	1.5	5.6	0.8	2.3	3.1	2.2	0.4	0.8	0.6
136	0.2	0.4	-	1.1	-	0.1	-	0.2	-	0.1	0.1
138	-	-	-	-	-	0.9	-	1.7	-	-	-



A/6.13

Hay - Park Grass

Sp. No.	Botanical Composition per cent. 1st Crop										Plot 16	
	Plot 8										1949	
	1939		1940		1941		1947		1948		U	L
	U	L	U	L	U	L	U	L	U	L	U	L
1	5.9	0.8	4.0	1.3	2.4	0.7	4.2	0.9	3.0	1.3	2.3	0.2
3	0.4	1.5	0.8	2.8	0.4	1.5	1.1	2.7	3.6	2.7	22.5	10.9
4	1.2	1.0	2.3	1.4	2.8	0.9	5.8	5.6	2.4	1.4	4.2	0.2
5	10.8	11.6	5.4	9.5	4.8	8.2	12.4	8.3	14.2	14.7	22.0	19.4
6	1.8	4.2	1.7	3.5	0.7	2.4	1.4	2.0	0.5	2.1	0.6	0.6
7	3.5	16.1	3.6	14.7	4.3	20.5	1.7	16.7	1.9	11.3	5.8	15.3
8	0.2	1.5	0.1	0.7	-	1.4	0.2	2.4	0.1	0.9	-	-
9	-	0.1	-	-	-	-	-	-	-	-	0.2	0.6
10	-	-	-	0.1	-	-	-	-	-	-	-	-
11	4.5	4.7	3.7	4.7	2.9	4.8	10.9	6.2	12.6	5.6	9.8	13.4
12	9.5	4.6	11.6	6.8	23.6	8.7	4.6	1.5	5.2	2.1	6.2	14.4
13	-	4.0	0.1	1.6	-	2.1	6.3	6.3	0.4	6.9	-	-
14	6.2	3.5	7.8	3.6	4.3	2.4	6.5	4.2	7.4	2.1	1.1	-
15	0.2	0.3	0.2	0.2	-	0.1	0.3	-	0.1	-	-	-
16	0.7	1.1	0.6	1.3	0.7	1.8	1.4	1.7	1.1	1.5	0.4	0.5
17	0.7	1.1	0.6	3.0	0.3	3.2	0.3	1.7	0.1	0.8	0.1	0.4
51	1.6	0.8	0.3	0.5	0.6	0.6	0.4	0.8	0.6	1.5	11.7	8.5
52	4.3	5.4	6.1	6.2	3.1	5.2	1.8	2.1	3.3	5.9	-	-
54	8.1	8.6	17.9	17.3	6.2	8.5	6.5	7.3	2.7	3.5	-	0.7
55	0.5	0.1	0.9	-	1.8	0.2	0.5	0.1	0.7	0.1	0.2	0.4
101	2.3	0.8	2.7	0.8	1.4	0.6	9.8	4.0	5.7	2.1	0.2	0.4
104	0.5	0.5	0.2	0.1	0.7	0.8	0.4	0.3	0.1	0.4	-	-
105	0.2	-	0.1	-	0.1	0.1	0.1	-	0.1	-	-	-
107	-	0.8	-	-	-	-	-	-	-	-	-	-
111	-	-	-	1.0	-	1.1	-	0.6	-	0.6	-	-
113	-	-	-	-	-	-	-	-	-	-	-	1.5
114	0.7	0.1	0.9	-	0.6	0.1	2.1	0.1	0.8	0.2	0.7	0.4
115	0.1	0.1	-	-	-	-	-	-	-	-	-	0.9
116	0.2	0.6	0.3	0.4	0.3	0.5	-	0.2	0.1	0.2	-	-
117	0.2	0.1	0.2	0.1	1.5	0.1	0.2	0.1	0.4	0.2	-	-
118	2.2	3.5	0.9	4.6	1.4	5.6	0.7	4.7	0.9	3.6	-	-
119	4.3	0.8	3.4	0.7	6.3	1.4	4.1	1.2	6.9	4.0	3.9	1.1
120	4.0	5.4	2.8	1.7	2.1	2.6	1.0	1.0	2.0	2.5	-	-
124	4.4	3.2	2.0	1.6	3.0	1.5	4.9	3.4	4.5	5.6	-	-
126	0.2	-	0.4	0.1	0.3	0.2	0.4	0.2	0.1	0.1	0.9	3.3
127	-	-	-	-	-	0.1	-	0.7	-	0.9	0.7	1.4
129	13.0	10.7	11.1	6.8	18.6	9.9	10.0	9.5	15.0	13.1	6.3	5.3
130	0.3	0.3	0.5	0.8	0.3	0.6	0.2	0.6	0.3	0.2	-	-
131	-	-	-	0.1	-	-	-	-	-	-	-	-
132	-	-	-	-	-	0.1	-	-	-	-	-	-
134	6.8	1.8	4.0	1.4	2.5	1.2	5.7	2.6	2.9	1.8	0.2	0.2
136	0.5	0.3	2.8	0.6	2.0	0.3	0.2	0.3	0.3	0.1	-	-
138	-	-	-	-	-	-	0.2	-	-	-	-	-



A/6.14

Botanical Composition per cent. 1st Crop  
Plot 9

Sp. No.	1939		1940		1941	1947		1948	
	U	L	U	L	U	U	L	U	L
1	2.0	0.8	5.3	2.6	5.6	23.8	3.4	7.8	4.3
3	0.1	69.4	0.1	55.0	-	0.8	31.8	-	38.1
4	3.2	0.7	0.3	2.4	8.0	15.7	12.4	0.4	4.2
5	0.3	14.3	0.9	21.9	0.2	4.3	13.2	0.6	14.7
6	-	-	-	-	-	-	-	-	0.1
7	-	-	-	0.2	-	-	0.5	-	0.5
9	-	0.1	-	1.0	-	-	0.1	-	0.1
11	-	4.3	-	4.1	0.2	0.2	12.5	-	11.6
12	0.1	1.9	0.1	4.7	0.1	0.1	2.8	0.1	4.3
14	94.1	2.5	93.3	2.1	85.1	51.3	3.4	90.6	2.5
16	-	4.4	-	2.1	-	0.1	3.8	-	9.4
17	-	-	-	0.1	-	-	-	-	-
51	-	0.8	-	0.7	-	-	6.0	-	3.5
55	-	-	-	-	0.1	-	-	-	-
112	-	-	-	-	-	1.6	-	0.5	-
113	-	0.1	-	0.2	-	-	0.1	-	-
114	-	-	-	-	-	-	0.8	-	0.1
115	-	0.2	-	2.0	-	-	1.4	-	1.5
119	-	-	-	-	-	-	0.2	-	0.5
124	-	-	-	-	-	0.1	-	-	-
126	-	0.5	-	0.6	-	0.1	4.8	-	3.3
127	-	-	-	-	-	-	0.3	-	0.1
129	0.1	-	-	-	-	0.1	0.2	-	0.1
134	0.1	-	-	0.3	0.7	1.8	2.3	-	1.1



A/6.15

Hay - Park Grass

Sp. No.	Botanical Composition per cent. 1st Crop										
	Plot 11 <sup>1</sup>				Plot 11 <sup>2</sup>				Plot 12	Plot 17	
	1947		1949		1947		1949		1949	1949	
	U	L	U	L	U	L	U	L	U	L	
1	4.5	0.8	-	-	44.1	0.2	5.3	-	3.5	1.2	0.6
3	1.0	78.9	0.1	82.0	0.8	70.2	0.3	57.5	7.6	14.5	7.3
4	0.8	0.7	-	-	0.1	0.1	-	-	3.4	8.7	0.8
5	0.3	2.9	-	2.3	12.7	11.3	0.8	17.5	0.8	-	1.7
6	-	-	-	-	-	-	-	-	0.2	-	1.5
7	-	-	-	-	-	-	-	-	4.1	1.7	20.5
8	-	-	-	-	-	0.1	-	-	6.0	0.6	0.7
9	-	0.1	-	-	-	-	-	-	-	-	0.7
11	-	2.5	-	4.9	-	7.8	-	10.3	8.8	25.4	21.1
12	0.2	-	-	0.4	0.2	-	0.1	-	19.4	9.4	22.3
13	-	-	-	-	-	-	-	-	1.7	-	0.8
14	81.1	7.6	99.6	3.5	40.8	2.4	92.8	1.6	2.8	8.4	2.1
15	-	-	-	-	-	-	-	-	-	0.6	2.4
16	-	4.5	-	5.1	0.1	6.3	-	10.6	0.2	-	0.1
17	-	-	-	-	-	0.1	-	-	-	-	0.6
51	-	-	-	-	-	0.1	-	-	1.1	0.1	-
52	-	-	-	-	-	-	-	-	7.4	-	2.8
54	0.2	-	-	-	-	-	-	-	4.6	-	-
55	-	-	-	-	-	-	-	-	0.2	-	-
101	-	-	-	-	-	-	-	-	0.7	0.4	2.1
104	-	-	-	-	-	-	-	-	0.1	0.1	0.1
105	-	-	-	-	-	-	-	-	0.2	-	-
109	-	-	-	-	-	-	-	-	0.1	-	-
111	-	-	-	-	-	-	-	-	0.2	-	-
112	11.9	-	0.3	-	-	-	-	-	-	-	-
114	-	0.1	-	-	-	-	-	-	1.3	0.4	0.1
115	-	-	-	-	-	0.1	-	0.1	-	-	0.2
116	-	-	-	-	-	-	-	-	0.1	-	-
117	-	-	-	-	-	-	-	-	0.9	-	0.4
118	-	-	-	-	-	-	-	-	1.7	-	-
119	-	-	-	-	-	-	-	-	1.8	1.2	1.0
120	-	-	-	-	-	-	-	-	1.8	5.5	1.4
123	-	-	-	-	-	-	-	-	0.1	-	-
124	-	-	-	-	-	-	-	-	10.0	4.0	1.7
126	-	1.6	-	0.5	-	1.3	-	1.3	0.2	1.4	0.6
127	-	-	-	-	-	-	-	-	0.1	-	0.5
129	-	-	-	-	-	-	-	-	6.8	14.0	5.6
130	-	-	-	-	-	-	-	-	0.1	-	-
134	-	0.3	-	1.3	1.2	-	0.7	1.1	1.0	0.6	0.2
136	-	-	-	-	-	-	-	-	0.6	-	0.1
137	-	-	-	-	-	-	-	-	0.4	1.8	-



A/6.16

Sp. No.	Botanical Composition per cent. 1st Crop									
	Plot 13									
	1944		1945		1946		1947		1948	
	U	L	U	L	U	L	U	L	U	L
1	8.4	-	6.3	-	8.0	0.1	10.9	-	15.7	0.2
3	56.7	5.8	46.0	6.8	32.5	8.6	27.6	13.7	31.9	10.4
4	4.8	0.5	4.9	0.3	15.5	1.2	14.2	0.8	6.3	0.3
5	0.9	5.9	2.1	7.0	1.4	10.9	2.1	14.2	3.4	25.9
6	0.1	-	-	-	-	-	-	-	-	0.1
7	-	-	-	0.2	-	0.4	0.1	0.7	-	0.3
9	0.1	0.1	-	0.1	-	0.1	-	-	-	0.1
11	6.7	8.6	5.6	7.8	6.8	27.5	9.8	24.2	9.1	21.5
12	3.6	1.1	3.4	1.6	6.0	1.1	4.5	1.0	4.0	0.9
13	-	-	-	-	-	-	-	0.1	-	-
14	2.7	1.8	4.5	2.1	5.7	5.4	6.2	5.3	2.5	4.4
15	0.1	-	-	-	-	-	-	-	-	-
16	1.3	1.4	0.8	1.9	0.1	1.4	0.9	2.3	0.9	1.8
17	0.4	1.2	0.1	8.2	0.1	5.8	0.2	4.6	0.1	1.2
51	0.3	31.0	0.5	26.6	0.2	4.4	0.7	6.3	0.5	7.9
52	-	0.2	-	0.3	-	0.1	-	-	-	-
54	-	7.3	-	6.0	0.1	2.4	0.1	1.2	-	2.4
55	-	2.6	-	4.0	-	0.8	-	-	-	0.3
101	-	0.9	-	2.1	0.1	1.0	0.6	2.3	0.1	2.2
104	0.3	0.5	-	0.2	0.1	0.1	0.1	0.2	0.1	0.2
105	0.2	-	0.6	-	0.6	0.1	0.2	-	0.1	-
113	0.2	2.0	-	-	-	0.3	-	0.2	-	0.7
114	0.9	-	1.6	0.2	1.0	0.1	2.0	-	0.8	0.1
115	0.2	-	1.3	-	-	-	-	-	-	-
117	-	-	-	-	0.4	-	-	-	-	-
119	0.6	0.2	3.0	0.5	2.9	0.4	3.8	0.5	4.0	0.3
120	0.3	4.0	-	0.4	0.5	0.4	0.7	1.6	0.2	0.7
123	0.2	-	-	-	-	-	-	-	-	-
124	-	0.9	0.3	1.2	0.4	1.3	0.3	1.5	1.7	1.3
126	0.3	6.2	0.7	3.6	1.0	4.1	0.9	5.4	1.5	3.2
127	-	0.5	-	2.2	-	1.0	-	0.4	0.3	1.3
129	6.2	16.2	12.1	14.5	14.0	19.3	10.3	10.8	14.7	11.5
130	0.5	0.7	0.4	0.9	0.9	0.4	0.7	0.2	0.2	-
131	-	0.1	-	-	-	-	0.2	-	-	-
134	3.9	0.3	5.8	1.3	1.7	1.3	2.9	2.5	1.9	0.8
136	0.1	-	-	-	-	-	-	-	-	-



A/6.17

Hay - Park Grass

Sp. No.	Botanical Composition per cent. 1st Crop														
	Plot 14														
	1939			1940			1941			1947			1948		
	U	L	L	U	L	L	U	L	L	U	L	L	U	L	L
	sun shade			sun shade			sun shade			sun shade			sun shade		
1	-	-	0.1	0.1	0.1	0.2	-	-	0.1	0.5	0.2	1.0	0.6	0.1	0.4
3	53.1	23.9	13.7	49.1	18.5	12.4	59.2	23.1	18.5	27.6	10.5	5.0	31.8	12.1	6.7
4	-	-	0.4	-	-	0.5	-	-	0.5	0.2	0.3	0.5	0.6	-	0.2
5	31.1	48.2	12.4	30.9	52.0	13.1	28.9	44.5	18.7	36.8	43.6	27.1	36.2	45.0	34.7
6	-	-	0.6	-	0.1	0.6	-	0.2	0.4	-	0.1	1.2	0.2	0.5	1.1
7	0.6	0.9	12.6	0.1	0.7	11.9	0.1	0.8	14.4	0.5	3.9	12.6	1.4	5.3	11.6
9	0.1	0.4	0.3	-	0.1	0.6	0.1	0.3	0.6	-	-	-	0.3	-	-
11	6.3	4.3	1.0	5.7	6.0	1.9	7.2	7.2	1.1	14.5	10.7	5.2	14.2	13.6	5.0
12	0.2	4.8	38.0	0.1	5.3	36.6	-	11.4	34.6	-	9.0	27.1	-	13.4	27.4
14	0.2	-	0.2	-	-	0.1	-	-	-	0.8	-	0.3	-	-	2.3
15	-	-	0.1	-	-	-	-	-	0.1	-	-	-	-	-	-
16	1.2	1.9	3.6	0.3	1.0	1.6	0.7	1.3	3.1	3.9	2.9	222	4.7	2.9	2.9
17	3.5	7.3	3.1	9.8	10.5	2.3	1.5	3.9	1.5	0.3	0.5	0.9	2.4	1.0	1.0
51	1.6	5.6	12.1	0.7	1.5	15.0	0.3	4.0	4.9	3.3	13.2	12.2	2.1	3.2	3.6
54	-	-	-	-	-	-	-	-	0.1	-	-	0.1	-	-	0.3
55	-	-	0.3	-	-	-	-	-	-	-	-	0.3	-	-	0.5
101	-	-	0.1	-	-	0.1	-	-	-	-	0.1	0.1	-	-	-
107	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-
113	0.6	1.2	0.6	1.3	2.3	1.9	0.8	0.1	0.6	5.3	0.8	0.3	0.2	0.7	0.5
114	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-
116	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-
119	-	-	0.2	-	-	0.1	-	-	-	-	-	0.1	-	-	0.1
120	-	-	-	-	-	0.1	-	-	-	0.2	-	-	-	-	-
126	0.1	0.2	0.2	0.6	0.9	0.7	0.7	2.0	0.6	3.0	2.9	3.6	3.2	1.1	1.7
127	-	-	-	-	-	-	-	-	-	-	0.9	-	-	0.5	-
129	0.1	-	-	-	-	0.2	-	0.1	-	1.1	0.3	0.1	1.6	-	-
134	1.3	1.3	0.3	1.3	1.0	0.1	0.5	0.8	0.2	2.0	0.1	0.1	0.4	0.6	-

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N



A/6.18

Sp. No.	Botanical Composition per cent. 1st Crop											
	Plot 18						Plot 19					
	1946		HL	1948		HL	1946		HL	1948		HL
	U	LL		U	LL		U	LL		U	LL	
1	74.6	2.0	1.4	76.9	3.4	1.2	8.1	2.8	0.1	11.8	4.3	0.4
2	-	-	3.1	-	-	-	-	-	-	-	-	-
3	1.8	2.9	2.9	0.1	2.8	3.8	13.1	18.3	19.7	6.2	25.2	16.7
4	4.2	2.3	0.2	0.8	0.8	-	9.1	2.7	0.1	7.3	1.5	-
5	-	10.1	10.3	0.5	24.6	25.0	9.8	6.4	13.9	5.7	5.5	14.3
6	-	-	-	-	-	-	1.4	0.5	2.4	1.7	3.0	3.1
7	-	1.0	0.7	-	3.2	0.8	0.5	1.7	2.7	0.9	1.9	5.4
9	-	0.4	0.1	-	0.3	0.1	-	0.5	0.1	-	0.2	0.3
11	-	12.5	36.5	1.3	35.0	48.3	3.6	4.4	4.3	3.3	10.9	13.6
12	12.5	9.8	5.1	8.9	6.8	2.2	4.6	2.5	3.3	9.8	5.0	4.5
13	-	-	-	-	0.1	-	2.4	-	4.1	1.1	0.4	5.7
14	0.5	0.3	0.3	-	0.2	-	2.7	2.0	0.4	1.3	1.7	-
15	-	0.1	0.1	-	0.1	0.1	-	-	-	-	-	0.3
16	--	1.1	1.0	-	0.8	1.1	0.2	0.9	1.4	0.6	0.9	1.9
17	0.1	0.6	0.3	-	0.2	0.2	0.5	1.0	1.3	0.5	1.8	0.7
18	-	1.6	-	-	2.6	0.1	-	-	-	-	-	-
51	-	0.1	1.4	-	-	0.5	9.5	10.5	13.2	13.5	7.4	7.5
52	-	-	-	-	-	-	-	-	2.6	1.1	-	1.7
54	-	0.4	0.1	-	0.1	0.1	0.4	1.2	0.8	0.2	-	0.5
55	-	0.1	-	-	-	-	0.9	2.9	1.5	2.7	1.0	0.7
101	-	-	-	-	-	-	5.9	10.4	2.2	5.7	7.9	4.0
104	-	0.6	0.1	-	0.1	-	0.3	0.4	0.1	0.2	-	-
105	-	-	-	-	-	-	-	-	-	0.2	-	-
107	-	0.2	-	-	-	-	-	-	-	-	-	-
111	-	-	-	-	0.1	-	-	-	-	-	-	-
113	-	-	-	-	-	-	-	0.4	0.1	-	-	-
114	-	0.1	-	-	0.3	0.1	0.4	0.4	0.2	0.3	0.4	-
115	-	1.5	2.4	-	0.6	1.6	0.1	1.5	1.7	1.0	0.4	1.1
117	-	-	0.4	-	-	-	-	-	-	-	-	-
119	-	0.1	0.5	-	0.2	-	6.3	5.4	1.9	10.2	5.2	2.3
120	-	10.2	0.9	-	3.5	--	-	0.7	1.8	-	1.0	1.4
123	-	-	-	-	-	-	0.3	-	-	-	-	-
124	-	0.1	-	-	0.1	-	0.1	-	-	0.4	-	-
126	-	22.6	23.4	0.2	8.9	10.8	1.3	2.5	1.7	0.6	0.6	1.0
127	-	1.5	3.4	-	1.2	2.6	-	0.1	0.8	-	0.4	2.9
129	0.1	17.3	4.5	-	3.8	1.0	15.8	14.2	16.3	11.8	10.4	9.7
130	-	-	-	-	-	-	0.9	1.8	0.9	0.2	0.7	-
131	-	-	-	-	-	-	-	-	-	0.2	-	-
134	6.2	0.5	0.9	11.2	0.2	0.4	1.8	3.9	0.4	1.3	2.3	0.3
136	-	-	-	-	-	-	-	-	-	0.2	-	-
138	-	-	-	0.1	-	-	-	-	-	-	-	-



4/6.19

Hay - Park Grass

Sp. No.	Botanical Composition per cent. 1st Crop Plot 20					
	1946			1948		
	U	LL	HL	U	LL	HL
1	2.9	1.5	0.1	4.1	2.5	0.1
3	33.9	18.0	12.6	39.2	21.8	17.6
4	1.3	3.2	0.7	1.1	1.9	0.2
5	9.9	26.9	15.5	15.1	21.7	17.4
6	1.5	2.3	2.6	4.0	1.9	3.3
7	2.6	4.0	9.1	0.7	3.0	6.8
9	-	0.3	0.2	0.2	0.1	0.2
11	10.3	7.9	4.3	14.6	14.4	14.2
12	4.8	3.6	9.4	3.7	2.8	4.8
13	0.5	-	0.5	-	-	-
14	3.0	2.9	1.4	1.0	5.7	1.6
15	0.1	0.2	0.2	-	0.1	0.8
16	0.3	0.3	1.2	1.3	0.4	3.0
17	0.9	4.0	3.6	1.3	3.9	4.3
51	5.5	4.8	7.1	4.3	2.1	8.8
52	0.3	-	0.4	0.1	-	-
54	-	-	0.6	-	0.1	0.2
55	-	0.7	3.0	0.6	2.8	0.8
101	5.0	1.2	1.9	1.2	1.9	1.3
104	0.1	0.2	0.3	-	0.3	-
113	0.7	2.7	0.7	0.5	-	0.3
114	0.2	0.1	0.1	-	-	-
115	-	-	0.6	0.1	--	0.2
117	-	-	0.3	-	-	0.4
119	1.7	1.8	3.7	0.4	1.8	2.7
120	-	1.9	2.8	-	0.7	0.2
126	1.3	2.6	3.0	0.7	1.1	2.3
127	3.7	0.2	3.1	3.3	1.1	3.8
129	3.2	6.7	6.3	0.9	6.2	4.1
130	1.2	0.5	3.0	0.1	0.3	0.1
134	5.1	1.5	1.7	1.5	1.4	0.5



A/6.20

Plot	Botanical Composition per cent. 1st Crop							
	1939				1940			
	Gram- ineae	Legum- inosae	Other orders	Dom. Sp.	Gram- ineae	Legum- inosae	Other orders	Dom. Sp.
1 U	95.3	-	4.7	117	98.0	-	2.0	ND
1 L	83.4	2.1	14.5	120	82.0	2.5	15.5	129
3 U	37.9	6.7	55.4	124	53.1	9.6	37.3	124
3 L	39.4	17.8	42.8	110	49.8	23.2	27.0	110 124 129
7 U	45.3	39.7	15.0	120	58.1	19.3	22.6	134 115
7 L	68.7	22.4	8.9	126	73.6	14.2	12.2	115 126
8 U	45.6	14.4	40.0	129	42.4	25.3	32.3	129
8 L	56.2	14.8	29.0	129	55.2	24.0	20.8	129 118
9 U	99.9	-	0.1	ND	100.0	-	-	-
9 L	98.4	0.8	0.8	126	96.2	0.7	3.1	115
10 U	100.0	-	-	-	99.9	0.1	-	-
10 L	97.6	-	2.4	134	95.7	-	4.3	134
14 U	96.3	1.6	2.1	134	96.0	0.7	3.3	113 134
14 L Sun	91.7	5.6	2.7	134	94.3	1.5	4.2	134 113
14 L Shade	86.1	12.5	1.4	ND	81.9	15.0	3.1	113
18 U	98.6	0.1	1.3	134	98.3	0.1	1.6	ND
18 LL	68.9	0.2	30.9	126	62.2	0.2	37.6	126
18 HL	73.6	0.3	26.1	126	61.9	0.4	37.7	126
19 U	65.6	19.9	14.5	ND	80.6	7.0	12.4	ND
19 LL	59.1	26.3	14.6	ND	84.1	3.9	12.0	ND
19 HL	72.8	19.0	8.2	ND	87.4	6.7	5.9	ND
20 U	84.4	9.0	6.6	134	83.6	5.9	10.5	ND
20 LL	65.5	23.4	11.1	ND	84.7	5.4	9.9	ND
20 HL	68.1	15.6	16.3	ND	79.2	7.0	13.8	ND

U - Unlimed; L - Limed; LL - Light lime; HL - Heavy lime; ND - None

Dominant

Columns headed "Dom. Sp." give the code numbers of the dominant non-gramineous or leguminous species.



A/6.21

Hay - Park Grass

Botanical Composition per cent. 1st Crop

Plot	1941				1942			
	Gram- ineae	Legum- inosae	Other orders	Dom. Sp.	Gram- ineae	Legum- inosae	Others orders	Dom. Sp.
1 U	95.9	0.2	3.9	ND	96.7	0.1	3.2	ND
1 L	73.4	3.7	22.9	ND	72.6	3.5	23.9	ND
3 U	46.8	12.4	40.8	ND	48.1	8.0	43.9	110
3 L	47.0	17.7	35.3	129 110	52.2	11.1	36.7	129
7 U	22.8	28.5	48.7	ND	67.4	9.8	22.8	ND
7 L	63.2	25.7	11.1	ND	63.9	11.4	24.7	ND
8 U	47.2	11.7	41.1	129	40.4	6.9	52.7	129
8 L	58.7	14.5	26.8	129 118	64.8	9.9	25.3	ND
9 U	99.2	0.1	0.7	ND	99.6	-	0.4	ND
9 L	98.9	0.3	0.8	ND	94.6	0.1	5.3	ND
10 U	98.3	-	1.7	ND	99.4	0.1	0.5	ND
10 L	98.6	0.1	1.3	ND	90.7	-	9.3	ND
14 U	97.6	0.3	2.1	ND	94.7	0.3	5.0	ND
14 L Sun	92.6	4.1	3.3	126	91.7	0.9	7.4	ND
14 L Shade	93.5	5.0	1.5	ND	91.9	3.7	4.4	ND
18 U	96.7	0.1	3.2	134	90.3	-	9.7	ND
18 LL	57.1	0.3	42.6	ND	62.7	0.7	36.6	126
18 HL	59.7	0.1	40.2	ND	62.7	0.4	36.9	ND
19 U	82.3	5.9	11.8	ND	77.7	2.4	19.9	ND
19 LL	86.7	4.3	9.0	ND	79.5	1.5	19.0	ND
19 HL	90.8	4.2	5.0	ND	94.7	0.5	4.8	ND
20 U	86.1	6.1	7.8	ND	67.0	3.3	29.7	ND
20 LL	82.4	3.7	13.9	ND	81.7	0.6	17.7	ND
20 HL	90.8	2.3	6.9	ND	87.0	1.1	11.9	ND

U - Unlimed; L - Limed; LL - Light lime; HL - Heavy lime; ND - None Dominant

N



A/6.22

Botanical Composition per cent. 1st Crop

Plot	1943				1944			
	Gram- ineae	Legum- inosae	Other orders	Dom. Sp.	Gram- ineae	Legum- inosae	Other orders	Dom. Sp.
1 U	99.0	-	1.0	ND	96.5	0.2	3.3	120
1 L	70.3	2.5	27.2	129	65.7	2.0	32.3	ND
3 U	54.2	8.2	37.6	ND	60.7	5.3	34.0	ND
3 L	41.3	12.7	46.0	110	28.4	17.3	54.3	110
7 U	54.0	19.4	26.6	114	38.2	31.9	29.9	ND
7 L	71.1	16.6	12.3	ND	52.3	34.3	13.4	ND
8 U	46.6	14.6	38.8	ND	35.0	16.8	48.2	ND
8 L	48.3	19.6	32.1	ND	46.4	20.2	33.4	ND
9 U	100.0	-	-	-	100.0	-	-	-
9 L	97.9	0.1	2.0	ND	95.8	-	4.2	115
10 U	99.8	0.1	0.1	ND	99.8	0.1	0.1	ND
10 L	98.7	-	1.3	ND	93.5	-	6.5	134
13 U	not sampled				85.8	0.3	13.9	129
13 L	not sampled				26.4	41.1	32.5	129
14 U	98.1	0.5	1.4	ND	98.3	0.6	1.1	ND
14 L Sun	97.1	1.3	1.6	ND	93.8	4.0	2.2	ND
14 L Shade	95.1	2.6	2.3	ND	94.9	2.5	2.6	126
18 U	98.7	0.1	1.2	134	80.2	0.3	19.5	134
18 LL	78.8	0.1	21.1	126	43.2	0.9	55.9	ND
18 HL	85.9	0.4	13.7	126	64.1	0.6	35.3	126
19 U	75.5	7.7	16.8	ND	62.4	8.0	29.6	ND
19 LL	79.7	4.5	15.8	ND	67.6	10.7	21.7	ND
19 HL	79.0	9.3	11.7	ND	76.7	5.6	17.7	ND
20 U	91.7	2.3	6.0	ND	88.6	2.8	8.6	ND
20 LL	90.1	1.4	8.5	115	84.0	1.1	14.9	ND
20 HL	83.8	1.5	14.7	ND	78.4	2.7	18.9	ND

U - Unlimed; L - Limed; LL - Light lime; HL - Heavy lime; ND - None Dominant



A/6.23

Hay - Park Grass

Botanical Composition per cent. 1st Crop

Plot	1945				1946			
	Gram- ineae	Legum- inosae	Others orders	Dom. Sp.	Gram- ineae	Legum- inosae	Other orders	Dom. Sp.
1 U	95.1	0.1	4.8	109	98.5	-	1.5	ND
1 L	53.2	6.9	39.9	129	64.8	6.2	29.0	ND
3 U	52.8	12.4	34.8	110 124	45.6	14.0	40.4	124
3 L	28.3	20.9	50.8	ND	27.2	21.0	51.8	124
7 U	26.1	40.1	33.8	120	28.6	25.9	45.5	ND
7 L	60.7	20.4	18.9	ND	65.4	15.5	19.1	127
8 U	31.7	17.5	50.8	129. 124 120	27.3	16.0	56.7	124
8 L	33.2	24.2	42.6	ND	33.0	24.0	43.0	124 129
9 U	100.0	-	-	-	99.6	-	0.4	ND
9 L	89.7	3.4	6.9	115	95.6	0.2	4.2	ND
10 U	100.0	-	-	-	99.6	0.1	0.3	134
10 L	97.5	-	2.5	134	93.3	-	6.7	134
13 U	73.7	0.5	25.8	129	76.0	0.3	23.6	129
13 L	36.1	36.9	27.0	129	62.5	7.7	29.8	129
14 U	97.7	1.6	0.7	126	92.5	2.1	5.4	113 126
14 L	90.2	6.6	3.2	126	87.6	9.2	3.2	126
14 L	92.4	4.4	3.2	126	89.8	7.4	2.8	126
18 U	83.9	-	16.1	134	93.7	-	6.3	134
18 LL	52.4	0.1	47.5	126 129	44.7	0.6	54.7	126
18 HL	62.3	1.2	36.5	126 127	61.9	1.5	36.6	126
19 L	52.9	16.3	30.8	ND	56.0	10.8	33.2	129
19 LL	50.2	22.5	27.3	129	43.7	14.6	41.7	129
19 HL	70.0	15.4	14.6	ND	53.9	18.0	28.1	129
20 L	65.4	18.4	16.2	119	72.1	5.7	22.2	134
20 LL	65.3	12.5	22.2	119	74.9	5.6	19.5	129
20 HL	57.3	13.1	29.6	119	61.5	11.1	27.4	129

U - Unlimed; L - Limed; LL - Light lime; HL - Heavy lime; ND - None Dominant





A/6.24

Botanical Composition per cent. 1st Crop									
Plot	1947				Plot				
	Gram- ineae	Legum- inosae	Other orders	Dom. Sp.		Gram- ineae	Legum- inosae	Other orders	Dom. Sp.
1 U	93.1	-	6.9	134	2 U	58.0	10.7	31.3	124
1 L	70.9	3.7	25.4	129	2 L	58.6	15.4	26.0	ND
3 U	53.3	11.0	35.7	124	4 <sup>1</sup> U	46.8	13.5	39.7	134
3 L	39.5	15.2	45.3	110	4 <sup>1</sup> L	42.0	21.2	36.8	124
7 U	51.2	17.7	31.1	119	4 <sup>2</sup> U	97.9	-	2.1	ND
7 L	71.0	9.1	19.9	120	4 <sup>2</sup> L	77.4	0.1	22.5	134
8 U	50.8	9.2	40.0	129	5 <sup>1</sup>	72.8	1.1	26.1	ND
8 L	60.2	10.3	29.5	101	5 <sup>2</sup>	49.1	11.0	39.9	119
9 U	96.4	-	3.6	134	6	59.6	16.3	24.1	119
9 L	83.9	6.0	10.1	126					
10 U	98.8	-	1.2	134	11 <sup>1</sup> U	87.8	0.2	12.0	112
10 L	89.4	-	10.6	134	11 <sup>1</sup> L	98.0	-	2.0	126
13 U	76.6	0.7	22.7	129	11 <sup>2</sup> U	98.8	-	1.2	134
13 L	66.9	7.5	25.6	129	11 <sup>2</sup> L	98.4	0.1	1.5	126
14 U	85.1	3.3	11.6	113	12	53.2	8.5	38.3	124
14 L Sun	81.6	13.2	5.2	126					
14 L Shade	83.2	12.6	4.2	126					
18 U	93.4	-	6.6	134	15 U	61.9	14.1	24.0	129
18 LL	65.3	0.7	34.0	126	15 L	62.1	11.6	26.3	129
18 HL	64.7	1.6	33.7	127					
19 U	50.7	17.0	32.3	119	16 U	68.2	13.0	18.8	ND
19 LL	51.2	9.9	38.9	ND	16 L	72.3	7.5	20.2	129
19 HL	60.5	13.5	26.0	129					
20 U	68.6	8.5	22.9	134	17 U	69.7	0.1	30.2	129
20 LL	70.2	4.4	25.4	129	17 L	76.3	2.7	21.0	119
20 HL	52.4	10.3	37.3	127					

U - Unlimed; L - Limed; LL - Light lime; HL - Heavy lime; ND - None Dominant



Hay - Park Grass

A/6.25

Botanical Composition per cent. 1st Crop

Plot	1948			Plot	1949		
	Gram-ineae	Legum-inosae	Other orders		Gram-ineae	Legum-inosae	Other orders
1 U	94.7	-	5.3	2 U	53.6	15.4	31.0
1 L	63.3	4.6	32.1	2 L	51.4	17.8	30.8
3 U	53.0	7.2	39.8	4 <sup>1</sup> U	46.7	14.4	38.9
3 L	35.8	16.1	48.1	4 <sup>1</sup> L	44.3	22.4	33.3
7 U	46.6	19.8	33.6	4 <sup>2</sup> U	99.8	-	0.2
7 L	56.5	25.3	18.2	4 <sup>2</sup> L	94.7	-	5.3
8 U	52.5	7.3	40.2	5 <sup>1</sup>	82.2	3.0	14.8
8 L	53.4	11.1	35.5	5 <sup>2</sup>	44.6	26.5	28.9
9 U	99.5	-	0.5	6	37.7	31.3	31.0
9 L	89.9	3.5	6.6				
10 U	99.7	-	0.3	11 <sup>1</sup> U	99.7	-	0.3
10 L	93.8	-	6.2	11 <sup>1</sup> L	98.2	-	1.8
13 U	73.8	0.5	25.7	11 <sup>2</sup> U	99.4	-	0.6
13 L	67.0	10.6	22.4	11 <sup>2</sup> L	97.5	-	2.5
14 U	92.4	2.0	5.6	12	58.5	13.4	28.1
14 L Sun	93.8	3.2	2.9	1			
14 L Shade	93.4	4.3	2.3				
				15 U	42.2	27.8	30.0
				15 L	46.6	32.7	20.7
18 U	88.5	-	11.5	16 U	75.3	11.9	12.8
18 LL	80.9	0.1	19.0	16 L	76.0	9.6	14.4
18 HL	82.9	0.6	16.5				
19 U	50.3	17.4	32.3	17 U	70.6	0.1	29.3
19 LL	62.1	8.5	29.4	17 L	83.2	2.8	14.0
19 HL	66.9	10.4	22.7				
20 U	86.3	5.0	8.7				
20 LL	80.3	4.9	14.8				
20 HL	74.2	9.9	15.9				

These results have not been previously published. Sampling was discontinued in 1950.

U - Unlimed; L - Limed; LL - Light lime; HL - Heavy lime; ND - None Dominant



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#### WHEAT AND BARLEY - WOBURN STACKYARD

These are two almost identical, but distinct experiments which were for many years carried out on similar lines to those on Broadbalk and Hoosfield at Rothamsted. The field was under continuous wheat and barley from 1877 to 1926, and the treatments and results for this period are given in the 1928 Station Report p.103. From 1927-1940 no manures were applied, wheat and barley being grown each year except 1927, 28, 34, 35 when the field was fallowed. Results for 1929 to 1938 are given annually in the Station Reports in the sections devoted to Woburn. In 1941 and 42 a top dressing of 2 cwt. sulphate of ammonia was applied.

In 1943 a new scheme was started. The plots were divided into sets of three according to their previous manurial treatments (omitting plots 2, 5 and 8 of each crop, which were so acid as to give negligible crops). In 1943 the wheat was so weedy that it was ploughed up and the land fallowed for the rest of the season. In 1947 and 1948 the field was fallowed and no treatments were applied.

Area of one whole plot,  $\frac{1}{4}$  acre.

The experiments are discussed by H. H. Mann, "The influence of fallowing on the yield of wheat or barley on very exhausted land", *J. Agric. Sci.*, 33, (1943), 207.

#### Treatments

In the present system of manuring, of each set of three plots one receives a top-dressing of nitrochalk at 2 cwt. per acre (N1), one at 4 cwt. (N2), and the third at 6 cwt. (N3). The dressings rotate in cyclical order.

Summary of treatments 1877-1926 (plots arranged in the present sets of three)

Plot 1 Unmanured

3 Nitrate of Soda; 3a, (2N) since 1877; 3b, (1N) since 1907 only.  
3aa, as 3a with lime in 1921; 3bb, as 3b with lime in 1921

7 Unmanured

4a Minerals; 4b, as 4a with lime in 1915

6 Minerals and Nitrate of Soda, (1N)

9a, 9b Minerals and, in alternate years, Nitrate of Soda (1N)

10a Superphosphate and Nitrate of Soda (1N)

10b Rape cake (1N)

11a Sulphate of Potash and Nitrate of Soda (1N)

11b Dung (4N)



A/7.2

- 2 Sulphate of Ammonia (1N); 2a unlimed, 2aa, limed in 1905, 09, 10, 11, 2b, limed in 1897 2bb limed in 1897 and 1905
- 5 Minerals and Sulphate of Ammonia (1N); 5a, unlimed 5aa, limed in 1905 and 1916 5b, limed in 1905
- 8 Minerals and, in alternate years, Sulphate of Ammonia (2N); 8a, 8b unlimed, 8aa and 8bb limed in 1905 and 1918

N provides 25 lb. per acre of Ammonia

Crop Notes

Wheat-Red Standard			Barley - Plumage Archer		
Year	Sown	Harvested	Year	Sown	Harvested
1939	17.10.38	Aug. 15	1939	Feb.27	Aug. 17
1940	2 .11.39	Aug. 17	1940	Mar. 9	Aug. 8
1941	15.10.40	Aug. 19	1941	Mar.18	Sept.10
1942	19.11.41	Aug. 17	1942	Apr.13	Sept. 4
1943		Ploughed in, May 6	1943	Mar.12	Aug. 27
1944	27.9.43	Aug. 15	1944	Mar. 8	Sept. 4
1945	23.10.44	Aug. 2	1945	Mar. 6	Aug. 2
1946	2. 10.45	Aug. 22	1946	Mar.13	Aug. 15



A/7.3

Wheat and Barley - Woburn Stackyard

Yields of Wheat (lb. per acre)

Plot	Grain 1939	Straw	Grain 1940	Straw	Grain 1941	Straw	Grain 1942	Straw
1	450	976	294	609			213	680
2a	85	341	Nil	81	Nil	Nil	Nil	Nil
2aa	416	993	8	147	77	242	Nil	Nil
2b	263	847	98	214	113	255	Nil	Nil
2bb	337	674	278	459	528	1117	48	161
3a	289	632	447	721	935	1865	302	893
3b	155	386	239	506	641	1123	325	675
4	480	1124			975	2522	671	1396
5a	652	1362	201	423	258	610	79	417
5b	575	1030	217	602	1016	1815	171	364
6	435	1019	695	1362	1347	2246	797	2043
7	367	761	402	932	680	1909	334	901
8a	101	222	36	81	Nil	Nil	Nil	Nil
8aa	625	1117	355	649	69	177	67	419
8b	218	444	73	113	56	177	Nil	Nil
8bb	621	1194	218	452	278	661	173	706
9a	344	1052	544	1171	1115	2421	764	1929
9b	560	1194	474	919	919	1800	526	1339
10a	272	597	186	273			382	598
10b	289	554	231	446			371	888
11a	363	950	591	880	1197	2148	828	1516
11b	443	1312	918	1720	1211	2807	1168	2732

Yields of plots damaged by rabbits, or otherwise invalidated, are omitted.



A/7.4

Yields of Barley (lb. per acre)

Plot	Grain 1939	Straw	Grain 1940	Straw	Grain 1941	Straw	Grain 1942	Straw
1	385	1071	21	350	284	896	194	483
2a	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2aa	367	1316	24	453	284	933	146	435
2b	341	877	24	325	442	1017	363	827
2bb	349	910	24	340	566	1200	151	384
3a	361	747	20	373	412	850	411	762
3aa	363	887	24	302	234	600	185	556
3b	593	1266	20	390	420	933	383	823
3bb	259	755	24	208	142	367	125	384
4a	337	976	12	234	691	1203	417	894
4b	228	929	12	226	304	1138	404	890
5a	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
5aa	175	774	Nil	Nil	Nil	Nil	323	762
5b	417	885	28	655	606	1057	560	947
6	717	1342	12	250	924	1484	1086	1384
7	368	1028	19	372	388	721	246	586
8a	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8aa	435	1065	20	468	Taken with 8bb		658	1313
8b	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8bb	577	1113	20	500	686	1242	483	1100
9a	727	1412	37	677	1006	1675	975	1600
9b	572	1417	79	744	862	1500	1281	1583
10a	345	932	17	280	297	744	204	504
10b	288	1212	17	280	192	686	136	620
11a	444	967	76	543	676	1496	915	1393
11b	668	1635	135	912	886	876	1405	1909



A/7.5

Wheat and Barley - Woburn Stackyard

X New system of Manuring - Yields, (lb. per acre).  
Plots arranged in their groups of three.

Wheat

Plot	Grain 1944	Straw	Grain 1945	Straw	Grain 1946	Straw
1	N2 1980	4887	N1 737	1334	N3	
3	N1 2259	5411	N3 1466	2559	N2 469	1927
7	N3 2494	5794	N2 841	2140	N1	
4	N3 2104	4371	N2 664	1558	N1	
6	N1 2318	5539	N3 1377	2689	N2 379	1862
9	N2 3625	6782	N1 601	1229	N3 744	2205
10a	N2 2250	5645	N1 587	1151	N3 569	2446
10b	N3 2109	4960	N2 833	1635	N1	
11a	N1 2504	7917	N3 1693	3183	N2 425	2014
11b(1)	N3 1872	4829	N2 1451	2841	N1 372	1598
11b(2)	N1 2452	6079	N3 1591	3037	N2 585	2354
11b(3)	N2 1689	4421	N1 762	1524	N3 750	2384

Yield of plots damaged by rabbits, or otherwise invalidated, are omitted.

Barley

Plot	1943		1944		1945		1946	
	Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw
1	N1 87	311	N3 906	1766	N2 539	1839	N1 209	1123
3	N2 328	863	N1 529	1037	N3 908	2015	N2 419	1456
7	N3 458	977	N2 549	1115	N1 533	1594	N3 879	1958
4	N3 519	1051	N2 1343	1936	N1 676	2053	N3 862	1944
6	N1 551	1144	N3 821	1535	N2 1019	2717	N1 513	1683
9	N2 928	1661	N1 988	2152	N3 1020	2144	N2 1018	2686
10a	N3 107	422	N2 404	1122	N1 304	1393	N3 308	1447
10b	N1 99	1045	N3 635	1929	N2 519	2081	N1 226	1101
11a	N2 702	1764	N1 668	2227	N3 857	2143	N2 780	2195
11b(1)	N2 1237	2537	N1 896	2530	N3 1006	2959	N2 757	2482
11b(2)	N3 800	2075	N2 604	2067	N1 727	2285	N3 1253	3279
11b(3)	N1 606	2475	N3 1192	2545	N2 1087	2628	N1 1178	2586