

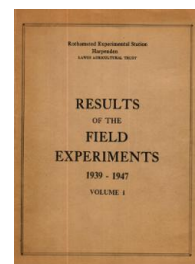
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A/6 Park Grass - Hay

Rothamsted Research

Rothamsted Research (1948) *A/6 Park Grass - Hay* ; Yields Of The Field Experiments 1939-1947
Volume 1, pp 27 - 52 - DOI: <https://doi.org/10.23637/ERADOC-1-145>

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 ₁	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 ₂ O ₅).
4-2	N ₂ P	Sulphate of ammonia (86 lb.N), superphosphate (65 lb.P ₂ O ₅).
5-1	O	Unmanured, following ammonium salts (86 lb.N), 1856-97.
5-2	PK	Superphosphate (65 lb. P ₂ O ₅), sulphate of potash (245 lb. K ₂ 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 ₂ O ₅). Sulphate of potash (245 lb. K ₂ O). Sulphate of soda (100 lb.) Sulphate of magnesia (100 lb.)
8	FM	Complete minerals without sulphate of potash.
9	N ₂ PKM	Complete minerals, with sulphate of ammonia (86 lb. N).
10	N ₂ FM	Complete minerals, without sulphate of potash; with sulphate of ammonia (86 lb. N).

A/6.2

Plot		
11-1	N ₃ PKM	Complete minerals, with sulphate of ammonia (129 lb. N).
11-2	N ₃ 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 ₂ '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 ₁ 'PKM	Complete minerals, with nitrate of soda (43 lb. N).
17	N ₁ '	Nitrate of soda (43 lb. N).
18	N ₂ 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 ₂ O ₅) and sulphate of potash (142 lb. K ₂ 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 ₂ O ₅) and sulphate of potash (49 lb. K ₂ O); following superphosphate (66 lb. P ₂ O ₅) 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

A/6.6

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 ¹	
	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 ¹ 1949	Plot 5 ²
	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	-	-	-

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X

A/6.11

Hay - Park Grass

Sp. No.	Botanical Composition per cent.											
	Plot 4 ²				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 ¹				Plot 11 ²				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	-

43

N

A/6.18

Sp. No.	Botanical Composition per cent. 1st Crop											
	Plot 18						Plot 19					
	1946			1948			1946			1948		
	U	LL	HL	U	LL	HL	U	LL	HL	U	LL	HL
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 ¹ U	46.8	13.5	39.7	134
3 L	39.5	15.2	45.3	110	4 ¹ L	42.0	21.2	36.8	124
7 U	51.2	17.7	31.1	119	4 ² U	97.9	-	2.1	ND
7 L	71.0	9.1	19.9	120	4 ² L	77.4	0.1	22.5	134
8 U	50.8	9.2	40.0	129	5 ¹	72.8	1.1	26.1	ND
8 L	60.2	10.3	29.5	101	5 ²	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 ¹ U	87.8	0.2	12.0	112
10 L	89.4	-	10.6	134	11 ¹ L	98.0	-	2.0	126
13 U	76.6	0.7	22.7	129	11 ² U	98.8	-	1.2	134
13 L	66.9	7.5	25.6	129	11 ² 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 ¹ U	46.7	14.4	38.9
3 L	35.8	16.1	48.1	4 ¹ L	44.3	22.4	33.3
7 U	46.6	19.8	33.6	4 ² U	99.8	-	0.2
7 L	56.5	25.3	18.2	4 ² L	94.7	-	5.3
8 U	52.5	7.3	40.2	5 ¹ U	82.2	3.0	14.8
8 L	53.4	11.1	35.5	5 ² L	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 ¹ U	99.7	-	0.3
10 L	93.8	-	6.2	11 ¹ L	98.2	-	1.8
13 U	73.8	0.5	25.7	11 ² U	99.4	-	0.6
13 L	67.0	10.6	22.4	11 ² 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

[The table content is extremely faint and illegible due to the quality of the scan. It appears to be a multi-column table with several rows of data.]

A/7.1

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)