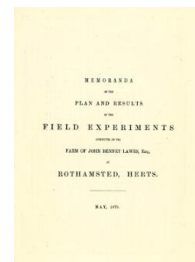


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Memoranda of the Field Experiments at Rothamsted, May 1873

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Experiments on Permanent Meadow Land; the Park

Rothamsted Research

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THE PARK. EXPERIMENTS WITH DIFFERENT MANURES ON PERMANENT MEADOW LAND.

The Land has probably been laid down with Grass for some centuries. No fresh seed has been artificially sown within the last 40 years certainly; nor is there record of any having been sown since the Grass was first laid down. The experiments commenced in 1856, at which time the character of the herbage appeared uniform over all the Plots. Excepting as explained in the Table, and in the foot-notes, the same description of Manure has been applied year after year to the same Plot.

(Area under experiment, about 7 acres.)

PLOTS.	1 acre. 1 lb. (pound avoiz.) 1 cwt. (hundredweight) 1 ton 1 lb. per acre 1 cwt. per acre	= (about) 0.45 Kilogramme .. = (about) 51.0 Kilogrammes .. = (about) 1016.0 Kilogrammes .. = (about) 1.12 Kilogramme per Hectare or 125.5 Kilogrammes per Hectare	1.59 Prussian Morgen. 0.91 Zollverein Pfund. 1.02 Centner. 20.33 Centner. 0.57 Zollv. Pfd. per P. Morgen. 0.64 Centner per Hectare	Produce per Acre, weighed as Hay.					PLOTS.			
				14th Season; 1869.	15th Season; 1870.	16th Season; 1871.	17th Season; 1872.	Average per Annum; 16 years 1869-1871.				
				Manures, per acre, per Annum.								
1	{ 1856-63, 8 years, 14 tons Farmyard Manure, and 200 lbs. Ammonia-salts (a); average produce 49½ cwt. } { 1864 and since, 200 lbs. Ammonia-salts alone; average produce (8 years, 1864-71) 43½ cwt. }	.. .. .	.. .. .	Cwts.	61	Cwts.	16½	Cwts.	43½	Cwts.	46½	1
2	{ 1856-63, 8 years, 14 tons Farmyard Manure; average produce 42½ cwt. } { 1864 and since, unmanured; average produce (8 years, 1864-71) 38½ cwt. }	.. .. .	.. .. .	.. .. .	55½	.. .. .	13½	33½	25½	40½	2	
3	Unmanured, continuously	.. .. .	.. .. .	.. .. .	38	.. .. .	5½	25½	14½	22½	27½	3
4	3½ cwt. Superphosphate of Lime (b)	.. .. .	.. .. .	.. .. .	40½	.. .. .	7½	24½	15½	24½ (c)	24½ (c)	1 ½ 4
5	3½ cwt. Superphosphate of Lime, and 400 lbs. Ammonia-salts	.. .. .	.. .. .	.. .. .	45½	.. .. .	8½	28½	18½	36½	36½	2 ½ 5
6	400 lbs. Ammonia-salts	.. .. .	.. .. .	.. .. .	35½	.. .. .	5½	29½	22½	28½	28½	6
(c) 6	{ 1856-68, 13 years. 400 lbs. Ammonia-salts; average produce 30½ cwt. } { 1869 and since, 300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwt. Superphos.; av. prod. (3 yrs., 1869-71) 36½ cwt. }	.. .. .	.. .. .	.. .. .	56½	.. .. .	16½	37½	25½	31½	31½	7
7	300 lbs. Sulphate Potass, 100 lbs. (a) Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwt. Superphosphate	.. .. .	.. .. .	.. .. .	54½	.. .. .	17½	39½	37½	35½	35½	8
(c) 8	{ 1856-61, 6 years, 300 lbs. Sulph. Potass, 200 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwt. Superphosphate; average produce 35 cwt. } { 1862 and since, 250 lbs. (a) Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwt. Superphosphate; average produce (10 years, 1862-71) 30 cwt. }	.. .. .	.. .. .	.. .. .	46½	.. .. .	12½	30	22½	32½	32½	9
9	300 lbs. Sulphate Potass, 100 lbs. (a) Sulphate Soda, 100 lbs. Sulphate Magnesia, 3½ cwt. Superphosphate, and 400 lbs. Ammonia-salts	.. .. .	.. .. .	.. .. .	68½	.. .. .	29½	58½	50½	52½	52½	10
10	{ 1856-61, 6 yrs, 300 lbs. Sulph. Potass, 200 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwt. Superphos., 400 lbs. Amm.-salts; av. prod. 55½ cwt. } { 1862 and since, 250 lbs. (a) Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwt. Superphos., 400 lbs. Amm.-salts; av. prod. (10 yrs., 1862-71) 45½ cwt. }	.. .. .	.. .. .	.. .. .	57½	.. .. .	21½	46½	38½	49½	49½	11
11	{ 300 lbs. Sulph. Potass, 100 lbs. (a) Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwt. Superphosph., 800 lbs. (a) Ammonia-salts } { 300 lbs. Sulph. Potass, 100 lbs. (a) Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwt. Superphosph., 800 lbs. (a) Ammonia-salts, and 400 lbs. Silicate Soda (b) .. .. . }	.. .. .	.. .. .	.. .. .	75½	.. .. .	42½	56½	63½	60½	60½	1 ½ 11
12	Unmanured continuously	.. .. .	.. .. .	.. .. .	78½	.. .. .	49½	65½	63½	64½	64½	2 ½ 12
13	300 lbs. Sulph. Potass, 100 lbs. (a) Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwt. Superphosph., 400 lbs. Ammonia-salts, 2000 lbs. Cut Wheat-straw	.. .. .	.. .. .	.. .. .	38½	.. .. .	11½	26½	20½	25½	25½	13
14	550 lbs. Nitrate of Soda (c), 300 lbs. Sulphate Potass, 100 lbs. (c) Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwt. Superphosphate	.. .. .	.. .. .	.. .. .	77½	.. .. .	48	63	62½	56½	56½	14
15	550 lbs. Nitrate of Soda	.. .. .	.. .. .	.. .. .	76½	.. .. .	56½	61½	55½	57½	57½	15
16	275 lbs. Nitrate of Soda, 300 lbs. Sulphate Potass, 100 lbs. (a) Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwt. Superphosphate	.. .. .	.. .. .	.. .. .	53½	.. .. .	15½	38½	32½	36½	36½ (d)	16
17	275 lbs. Nitrate of Soda	.. .. .	.. .. .	.. .. .	74½	.. .. .	33½	57	40	48½	48½	17
18	Mixture supplying the quantity of Potass, Soda, Lime, Magnesia, Phosphoric acid, Silica, and Nitrogen, contained in 1 ton of Hay (commencing 1865)	.. .. .	.. .. .	.. .. .	54½	.. .. .	19½	38½	29½	35½	35½	18
19	275 lbs. Nitrate of Soda, 290 lbs. Sulphate of Potass, and 3½ cwt. Superphosphate (commencing 1872)	.. .. .	.. .. .	.. .. .	55½	.. .. .	14½	37½	33½	33½ (a)	33½ (a)	19
20	327 lbs. Nitrate of Potass, and 3½ cwt. Superphosphate (commencing 1872)	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	.. .. .	20

(1) "Ammonia-salts"—in all cases equal parts Sulphate and Murate of Ammonia of Commerce.
 (2) The "Superphosphate of Lime" is, in all cases, made from 200 lbs. Bone-ash, 150 lbs. Sulphuric Acid Sp. gr. 1.7 (and water).
 (3) Plots 6, 8, and 10, had, besides the Manures specified, 2000 lbs. Sawdust per acre per annum for the first 7 years, 1856-1862, but without effect.
 (4) 200 lbs. 1856-63 inclusive.
 (5) 500 lbs. in 1862 and 1863.
 (6) Only 400 lbs. in 1859-60-61.
 (7) The application of Silicates did not commence until 1862.
 (8) 550 lbs. Nitrate of Soda is reckoned to contain the same amount of Nitrogen as 400 lbs. of "Ammonia-salts."
 (9) Average of 13 years only, as the manures specified were first applied in 1859 (previously, 1856-7 and 8, Sawdust only).
 (10) Average of 14 years only, as these experiments did not commence until 1858.
 (11) Average of 7 years only, as the experiment only commenced in 1865.