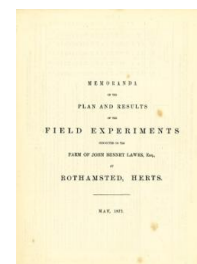


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ROTHAMSTED
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Memoranda of the Field Experiments at Rothamsted, May 1872



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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.

PLOTS.	Manures, per acre, per Annum.				Produce per Acre, weighed as Hay.				Average per Annum; 16 Years 1856-1871.	PLOTS.
	13th Season; 1868.	14th Season; 1869.	15th Season; 1870.	16th Season; 1871.	Cwts.	Cwts.	Cwts.	Cwts.		
1	(1856-63, 8 yrs, 14 tons Farnyard Manure, and 200 lbs. Ammonia-salts ⁽¹⁾ ; average produce 49½ cwts. } (1864 and since, 200 lbs. Ammonia-salts alone; average produce (8 years, 1864-71) 43½ cwts. }	0.40 Hectare or 1.59 Prussian Morgen. 0.45 Kilogrammes or 0.91 Zollverein Pfund. 51.0 Kilogrammes or 1.02 Centner. (about) (about) (about) (about) (about)	61	43½	46½	1				
2	(1856-63, 8 years, 14 tons Farnyard Manure; average produce 42½ cwts. (1864 and since, unmanured; average produce (8 years, 1864-71) 38½ cwts. }	1.12 Kilogrammes per Hectare or 0.57 Zollv. Pfd. per Pr. Morgen. 125.5 Kilogrammes per Hectare or 0.64 Centner per Pr. Morgen. (Area under experiment, about 7 acres.)	55½	33½	40½	2				
3	Unmanured, continuously		38	25½	22½	3				
4	3½ cwts. Superphosphate of Lime ⁽²⁾		40½	24½	24½	1 } 4				
4	3½ cwts. Superphosphate of Lime, and 400 lbs. Ammonia-salts		45½	38½	36½					
5	400 lbs. Ammonia-salts		24	29½	28½	2 } 4				
5	3½ cwts. Superphosphate of Lime		27½	37½	31½					
6	(1856-63, 13 years, 400 lbs. Ammonia-salts; average produce 30½ cwts. (1869 and since, 300 lbs. Sulph. Potass, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosph. ; av. prod. (3 yrs., 1869-71) 36½ cwts. }		38	39½	35½	6				
7	300 lbs. Sulphate Potass, 100 lbs. Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate		46½	30	32½	8				
8	(1856-61, 6 years, 300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwts. Superphosphate; average produce 36 cwts. (1862 and since, 250 lbs. Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate; average produce (10 years, 1862-71) 39 cwts. }		68½	58½	52½	9				
9	300 lbs. Sulphate Potass, 100 lbs. Sulphate Soda, 100 lbs. Sulphate Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Ammonia-salts		59½	44½	49½	10				
10	(1856-61, 6 yrs, 300 lbs. Sulph. Potass, 200 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosph., av. prod. 55½ cwts. (1862 and since, 250 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosph., 400 lbs. Amm.-salts; av. prod. 55½ cwts.)		75½	60½	60½	1 } 11				
10	(300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosph., 800 lbs. Ammonia-salts (300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosph., 800 lbs. Ammonia-salts, and 400 lbs. Silicate Soda ⁽³⁾)		78½	65½	64½					
11	Unmanured continuously		38½	26½	25½	12				
12	300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosph., 400 lbs. Ammonia salts, 2000 lbs. Cut Wheat-straw		61	48	56½	13				
13	500 lbs. Nitrate of Soda ⁽⁴⁾ , 300 lbs. Sulphate Potass, 100 lbs. Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate		69	61	57½	14				
14	550 lbs. Nitrate of Soda		31½	53½	38½	15				
15	275 lbs. Nitrate of Soda, 300 lbs. Sulphate Potass, 100 lbs. Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate		51½	74½	48½	16				
16	275 lbs. Nitrate of Soda		28½	58½	38½	17				
17	Mixture supplying the quantity of Potass, Soda, Lime, Magnesia, Phosphoric acid, Silica, and Nitrogen, contained in 1 ton of Hay (commencing 1865)		27½	53½	38½	18				
18	275 lbs. Nitrate of Soda, 290 lbs. Sulphate of Potass, and 3½ cwts. Superphosphate (commencing 1872)		19				
19	327 lbs. Nitrate of Potass, and 3½ cwts. Superphosphate (commencing 1872)		20				

(1) "Ammonia-salts"—in all cases equal parts Sulphate and Muriate of Ammonin 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.