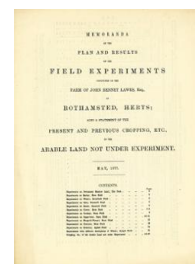


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Memoranda of the Field Experiments at Rothamsted: May 1877



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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.	Manures, per acre, per Annum.	PRODUCE PER ACRE, WEIGHED AS HAY.									
		Average per Annum.					Twenty-fourth Season, 1875 (18).				
		10 Years, 1866-66, (1)	10 Years, 1866-76, (2)	20 Years, 1866-76, (3)	First Crop.	Second Crop.	Total.	Cwts.	Cwts.	Cwts.	Twenty-fourth Season, 1875, (1875).
1	{1856-63, 8 years, 14 tons Farmyard Manure, and 200 lbs. Ammonia-salts (1); average produce 49½ cwts. } {1864 and since, 200 lbs. Ammonia-salts alone; average produce (12 years, 1864-75) 38½ cwts. }	48½	37½	43	33½	17½	51½	29½	1		
2	{1856-63, 8 years, 14 tons Farmyard Manure; average produce 42½ cwts. } {1864 and since, unmanured; average produce (12 years, 1864-75) 32½ cwts. }	41½	32	36½	26½	11½	38½	20½	2		
3	Unmanured, continuously.	22½	20	21½	20	12½	32½	12½	3		
4	3½ cwts. Superphosphate of Lime (4)	23½	21½	22½	21	15½	36½	16½	11		
5	3½ cwts. Superphosphate of Lime, and 400 lbs. Ammonia-salts	33½	30½	32½	36½	14½	51	35½	2		
6	400 lbs. Ammonia-salts	30½	22	26½	24½	18	42½	17½	5		
7	{1856-63, 13 years, 400 lbs. Ammonia-salts; average produce 30½ cwts. } {1869 and since, 300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate	31½	30½	30½	35½	15	50½	32	6		
8	300 lbs. Sulphate Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate	33½	36½	35½	40½	24	64½	34½	7		
9	{1856-61, 6 years, 300 lbs. Sulph. Potass, 200 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwts. Superphosphate; average produce 36 cwts. } {1862 and since, 250 lbs. Sulphate Potass, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate; average produce (14 years, 1862-75) 27½ cwts. }	38½	26½	30½	28½	16	44½	24½	8		
10	300 lbs. Sulphate Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 400 lbs. Ammonia-salts	53½	48½	51	52	24½	76½	50	9		
11	{1856-61, 6 yrs. 300 lbs. Sulph. Potass, 200 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Amm.-salts; av. prod. 55½ cwts. } {1862 and since, 250 lbs. Sulphate Potass, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate; av. prod. (14 yrs., 1862-75) 42½ cwts. }	52½	39½	46½	43	24½	67½	40	10		
12	300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Ammonia-salts	61½	58½	57½	46½	24½	97½	57½	11		
13	300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Ammonia-salts	63½	61½	62½	60	41	101	64½	2		
14	Unmanured continuously	25	22½	24	25½	14½	37½	14½	12		
15	300 lbs. Sulphate Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Ammonia-salts	55½	59½	57½	65	30½	95½	66½	13		
16	550 lbs. Nitrate of Soda (5), 300 lbs. Sulphate Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate	53½	60½	57	62½	17½	80½	64½	14		
17	275 lbs. Nitrate of Soda, 300 lbs. Sulphate Potass, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate	36½	35	38½	29½	13½	42½	30½	15		
18	275 lbs. Nitrate of Soda	45½	47½	46½	45	16½	61½	41½	16		
19	Mixture supplying the quantity of Potass, Soda, Lime, Magnesia, Phosphoric acid, Silica, and Nitrogen, contained in 1 ton of Hay (commencing 1865)	34½	33½	33½	30	13	43	25½	17		
20	275 lbs. Nitrate of Soda, 290 lbs. Sulphate of Potass, and 3½ cwts. Superphosphate (commencing 1872)	21	33½	32½	34½	15½	50½	31½	18		
	327 lbs. Nitrate of Potass, and 3½ cwts. Superphosphate (commencing 1872)	..	..	38½	41½	20½	61½	37	19
	..	..	..	36½	42½	21½	63½	38	20

(1) "Ammonia-salts" - in all cases equal parts Sulphate and Nitrate 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, laid, 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) The manures specified were first applied in 1859 (previously, 1856-7 and 8, Sawdust only).
 (10) Averages of 8 years, 10 years, and 18 years, as these experiments did not commence until 1858.
 (11) Averages of (1 year), 10 years, and 11 years, as the experiment only commenced in 1865.
 (12) Averages of 4 years only, 1872-75.
 (13) In previous years the second crop has either been fed off by sheep, without other food, or mown and left on the ground; but in the twentieth season, 1875, it was so unusually heavy, that it was cut, weighed as hay, and removed.
 (14) The second crop of the twentieth season (1875) is not included in these averages, as in all other years the first crop only was weighed and removed.