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Yields of the Field Experiments 1878

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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. During the first 19 years of the experiments, 1856-1874, the first crop only, each year, was mown, made into hay, removed from the land, and weighed. As a rule, the second crop was fed-off by sheep having no other food, the object being not to disturb the condition of the manuring. A given number was allotted to each Plot, according to the amount of produce, penned up a portion of it, and the area extended, day by day, until the whole was eaten down. Frequently, however, the animals suffered considerably; and in 1866, 1870, 1873, and 1874, the second crops (and third, if any) were cut, and spread on the respective Plots. In the twentieth season, 1875, the second crops being unusually heavy, and the weather favourable, they were, for the first time, cut, weighed as hay, and removed. In 1876 they were cut and spread on the Plots. In 1877 the second crops were again made into hay, weighed, and removed; and it is intended, in future, to adopt this plan, whenever the weather will permit.

(Area under experiment, about 7 acres.)

PLOTS.	Manures, per acre, per Annum.	PRODUCE PER ACRE, WEIGHED AS HAY.											
		Average per Annum.					Twenty-first Season, 1876.					Twenty-second Season, 1877.	
		10 Years, 1866-75, (15)	10 Years, 1866-75, 1867-75, (19)	Cwts. 1866-75.	Cwts. 1866-75, 1867-75.	First Crop.	Second Crop.	Total.	First Crop.	Second Crop.	Total.	Cwts. 1877.	
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. }	45½	37½	43	29½	..	..	..	42½	20	62½	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	20½	..	..	..	32½	16½	48½	2
3	Unmanured, continuously	22½	20	21½	12½	..	..	..	21	17½	38½	3
4	3½ cwts. Superphosphate of Lime (2)	23½	21½	22½ (1)	16½	..	..	..	27½	18½	46½	4
5	400 lbs. Ammonia-salts	35½	30½	32½ (1)	33½	..	..	..	42	13½	55½	
6	{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. Sulph. Magnesia, 3½ cwts. Superphos.; av. prod. (7 yrs., 1869-75) 31½ cwts. }	30½	22	26½	17½	..	..	..	26½	20	46½	5
7	300 lbs. Sulphate Potass., 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwts. Superphosphate	31½	30½	30½	32	..	..	..	37½	19½	57½	
8	{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. Sulph. Potass., 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwts. Superphosphate; average produce (14 years, 1862-75) 27½ cwts. }	33½	26½	30½	24½	..	..	..	45½	24	69½	7
9	300 lbs. Sulphate Potass., 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Ammonia-salts	53½	48½	51	50	..	..	..	54	22	76	9
10	{1856-61, 6 yrs. 300 lbs. Sulph. Potass., 200 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphos., 400 lbs. Amm.-salts; av. prod. 55½ cwts. } {1862 and since, 250 lbs. Sulph. Potass., 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphos., 400 lbs. Amm.-salts; av. prod. (14 yrs., 1862-75) 42½ cwts. }	52½	39½	46½	40	..	..	..	43½	25	68½	10
11	{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)}	61½	53½	57½	41½	..	..	..	60½	48½	109½	11
12	Unmanured continuously	25	22½	24	14½	..	..	..	19½	25½	44½	
13	300 lbs. Sulphate Potass., 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Ammonia-salts	55½	59½	57½	63½	..	..	..	56	29	85	13
14	550 lbs. Nitrate of Soda (4), 300 lbs. Sulphate Potass., 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Silicate Soda	53½	60½	57	64½	..	..	..	56	19	75	14
15	{1856-75, 18 years, 550 lbs. Nitrate of Soda } {1876, and since, 300 lbs. Sulphate Potass., 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwts. Superphosphate } {275 lbs. Nitrate of Soda, 300 lbs. Sulphate Potass., 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwts. Superphosphate }	36½	35	33½ (1)(2)	30½	..	..	..	33½	18	51½	15
16	Mixture supplying the quantity of Potass., Soda, Lime, Magnesia, Phosphoric acid, Silica, and Nitrogen, contained in 1 ton of Hay (commencing 1865)	45½	47½	46½	41½	..	..	..	54½	20½	75	16
17	275 lbs. Nitrate of Soda	34½	33½	33½	25½	..	..	..	33½	16	49½	17
18	275 lbs. Nitrate of Soda, 290 lbs. Sulphate of Potass., and 3½ cwts. Superphosphate (commencing 1872)	21	33½	32½ (1)	37	..	..	..	40½	19½	60	18
19	327 lbs. Nitrate of Potass., and 3½ cwts. Superphosphate (commencing 1872)	..	..	..	38½ (1)(2)	..	..	..	42½	19½	61½	19
20	327 lbs. Nitrate of Potass., and 3½ cwts. Superphosphate (commencing 1872)	..	..	..	38½	..	..	..	46	16½	62½	20

(1) "Ammonia-salts"—in all cases equal parts Sulphate and Muriate 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. 1856-1862, and 100 lbs. 1863-1875.
 (5) 500 lbs. in 1862 and 1867.
 (6) Only 400 lbs. in 1859-60-61.
 (7) The application of Silicates did not commence until 1862; 9 years (1862-1870), 200 lbs. Silicate Lime, and 200 lbs. Silicate Soda; 1871, and since, 400 lbs. Silicate Soda.
 (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 7 years, 10 years, and 11 years, as the experiment only commenced in 1865.
 (12) Averages of 4 years only, 1872-75.
 (13) 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.