

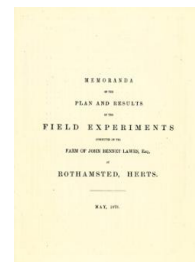
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Memoranda of the Field Experiments at Rothamsted, May 1873

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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.

| PLOTS. | Manures, per acre, per Annum. | | | | Produce per Acre, weighed as Hay. | | | | PLOTS. | | |
|--------|--|--------------------|--------------------|--------------------|--|--------------------|--------------------|--------------------|--------|--------------------|-------|
| | 14th Season; 1866. | 15th Season; 1871. | 16th Season; 1871. | 17th Season; 1872. | Average per Annum; 16 Years 1856-1871. | 14th Season; 1866. | 15th Season; 1871. | 16th Season; 1871. | | 17th Season; 1872. | Cwts. |
| 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 (8 years, 1864-71) 45½ cwts. | .. | .. | .. | .. | 61 | 16½ | 43½ | 31½ | 46½ | 1 |
| 2 | (1856-63, 8 years, 14 tons Farmyard Manure; average produce 42½ cwts. } { 1864 and since, unmanured; average produce (8 years, 1864-71) 38½ cwts. | .. | .. | .. | .. | 55½ | 13½ | 33½ | 25½ | 40½ | 2 |
| 3 | Unmanured, continuously | .. | .. | .. | .. | 38 | 5½ | 25½ | 14½ | 22½ | 3 |
| 4 | 3½ cwts. Superphosphate of Lime (2) | .. | .. | .. | .. | 40½ | 7½ | 24½ | 15½ | 24½ | 4 |
| 2 | 3½ cwts. Superphosphate of Lime, and 400 lbs. Ammonia-salts | .. | .. | .. | .. | 45½ | 8½ | 28½ | 18½ | 36½ (10) | |
| 5 | 400 lbs. Ammonia-salts | .. | .. | .. | .. | 35½ | 5½ | 29½ | 22½ | 28½ | 5 |
| 6 | (1856-68, 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. (3 yrs., 1869-71) 36½ cwts. | .. | .. | .. | .. | 56½ | 16½ | 37½ | 25½ | 31½ | 6 |
| 7 | 300 lbs. Sulphate Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwts. Superphosphate | .. | .. | .. | .. | 54½ | 17½ | 39½ | 37½ | 35½ | 7 |
| 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. Soda, 100 lbs. Sulph. Magnesia, and 3½ cwts. Superphosphate; average produce (10 years, 1862-71) 30 cwts. | .. | .. | .. | .. | 46½ | 12½ | 30 | 22½ | 32½ | 8 |
| 9 | 300 lbs. Sulphate Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulphate Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Ammonia-salts | .. | .. | .. | .. | 68½ | 29½ | 53½ | 50½ | 52½ | 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. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphos., 400 lbs. Amm.-salts; av. prod. (10 yrs., 1862-71) 45½ cwts. | .. | .. | .. | .. | 57½ | 21½ | 46½ | 38½ | 49½ | 10 |
| 11 | 300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Silicate Soda (3) | .. | .. | .. | .. | 75½ | 42½ | 56½ | 63½ | 60½ | 11 |
| 2 | 300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 400 lbs. Silicate Soda (3) | .. | .. | .. | .. | 78½ | 49½ | 65½ | 63½ | 64½ | |
| 12 | Unmanured continuously | .. | .. | .. | .. | 38½ | 11½ | 26½ | 20½ | 25½ | 12 |
| 13 | 300 lbs. Sulph. Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate, and 2000 lbs. Cut Wheat-straw | .. | .. | .. | .. | 77½ | 48 | 63 | 62½ | 56½ | 13 |
| 14 | 550 lbs. Nitrate of Soda (4), 300 lbs. Sulphate Potass, 100 lbs. Sulph. Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate | .. | .. | .. | .. | 76½ | 56½ | 61½ | 55½ | 57½ | 14 |
| 15 | 550 lbs. Nitrate of Soda | .. | .. | .. | .. | 53½ | 15½ | 38½ | 32½ | 36½ (10) | 15 |
| 16 | 275 lbs. Nitrate of Soda, 300 lbs. Sulphate Potass, 100 lbs. Sulphate Soda, 100 lbs. Sulphate Magnesia, and 3½ cwts. Superphosphate | .. | .. | .. | .. | 74½ | 33½ | 57 | 40 | 48½ | 16 |
| 17 | 275 lbs. Nitrate of Soda | .. | .. | .. | .. | 54½ | 19½ | 38½ | 29½ | 35½ | 17 |
| 18 | Mixture supplying the quantity of Potass, Soda, Lime, Magnesia, Phosphoric acid, Silica, and Nitrogen, contained in 1 ton of Hay (commencing 1865) | .. | .. | .. | .. | 55½ | 14½ | 37½ | 33½ | 33½ (11) | 18 |
| 19 | 275 lbs. Nitrate of Soda, 290 lbs. Sulphate of Potass, and 3½ cwts. Superphosphate (commencing 1872) | .. | .. | .. | .. | .. | .. | .. | 40 | .. | 19 |
| 20 | 327 lbs. Nitrate of Potass, and 3½ cwts. Superphosphate (commencing 1872) | .. | .. | .. | .. | .. | .. | .. | 38½ | .. | 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.