

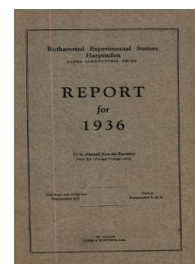
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## Rothamsted Report for 1936

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### Chemical Analyses of Manures Used in Replicated Experiments, 1936

#### Rothamsted Research

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## CHEMICAL ANALYSES OF MANURES USED IN REPLICATED EXPERIMENTS, 1936

| Manures.                               | % N             | % P <sub>2</sub> O <sub>5</sub> | % K <sub>2</sub> O              |
|--|-----------------|---------------------------------|---------------------------------|
| Sulphate of Ammonia .. .. .            | 21.0            | —                               | —                               |
| Nitrate of Soda .. .. .                | 16.2            | —                               | —                               |
| Nitrochalk .. .. .                     | 15.8            | —                               | —                               |
| Cyanamide .. .. .                      | 20.7            | —                               | —                               |
| Poultry Manure (Dried) (1) .. .. .     | 4.08            | 3.72                            | 1.79                            |
|  | 3.63            | 3.22                            | 1.60                            |
|  | 3.68            | 3.60                            | 1.71                            |
|  | 4.25            | 3.65                            | 1.67                            |
|  | 3.86            | 3.23                            | 1.65                            |
|  | 3.89            | 3.76                            | 1.78                            |
| Rape Dust .. .. .                      | 5.60            | 1.85                            | 0.99                            |
| Soot .. .. .                           | 3.12, 3.04      | —                               | —                               |
| Fish Meal .. .. .                      | 8.25            | 5.53                            | 1.45                            |
| Dung (2) .. .. .                       | 0.82            | 0.69                            | 0.86                            |
| Dung (3) .. .. .                       | 0.83            | 0.69                            | 0.87                            |
| Dung (4) .. .. .                       | 0.66            | 0.95                            | 0.95                            |
| Dung + Straw (5) .. .. .               | 0.92            | 1.12                            | 1.24                            |
| Superphosphate .. .. .                 | 17.0—17.6 Total | 15.6—15.7 Water Sol.            | } P <sub>2</sub> O <sub>5</sub> |
| Sulphate of Potash .. .. .             | 49.3            |                                 | } % K <sub>2</sub> O            |
| Muriate of Potash .. .. .              | 51.4            |                                 |                                 |
| Muriate of Potash (high grade) .. .. . | 62.2            |                                 |                                 |
| Potash Salt .. .. .                    | 31.0            |                                 |                                 |

- (1) Used for Rothamsted and Woburn Experiments. All other samples of poultry manure used at outside centres.  
 (2) Used in Rothamsted Sugar Beet Experiment.  
 (3) Used in Rothamsted Potato Experiment, Autumn application.  
 (4) (5) Used in Rothamsted Potato Experiment, Spring application.

### Three Course Rotation

| Manures.                    | % Organic Matter. | % N                                     | % P <sub>2</sub> O <sub>5</sub>         | % K <sub>2</sub> O                      |
|-----------------------------|-------------------|---|---|---|
| Chaffed Straw .. .. .       | 84.5              | 0.50                                    | 0.13                                    | 1.90                                    |
| Adco .. .. .                | 14.9              | 0.44                                    | 0.30                                    | 0.28                                    |
| Superphosphate .. .. .      | —                 | —                                       | 16.6 <sup>(1)</sup> 17.6 <sup>(2)</sup> | —                                       |
| Sulphate of Ammonia .. .. . | —                 | 20.9 <sup>(1)</sup> 21.0 <sup>(2)</sup> | —                                       | —                                       |
| Muriate of Potash .. .. .   | —                 | —                                       | —                                       | 52.0 <sup>(1)</sup> 51.4 <sup>(2)</sup> |
| Nitrate of Soda .. .. .     | —                 | 16.2                                    | —                                       | —                                       |

<sup>(1)</sup> Applied in Autumn.

<sup>(2)</sup> Applied in Spring.

### Four Course Rotation

| Manures.  | % Organic Matter. | % N  | % P <sub>2</sub> O <sub>5</sub> | % K <sub>2</sub> O |
|---|-------------------|------|---------------------------------|--------------------|
| Chaffed Straw .. .. .                             | 84.5              | 0.50 | 0.13                            | 1.90               |
| Dung .. .. .                                      | 16.9              | 0.62 | 0.29                            | 0.70               |
| Adco .. .. .                                      | 14.9              | 0.44 | 0.30                            | 0.28               |
| Superphosphate .. .. .                            | —                 | —    | 16.6                            | —                  |
| Mineral Phosphate (90 % through 120 mesh) .. .. . | —                 | —    | 25.7                            | —                  |
| Muriate of Potash .. .. .                         | —                 | —    | —                               | 52.0               |
| Sulphate of Ammonia .. .. .                       | —                 | 20.9 | —                               | —                  |



### Six Course Rotation

|                                     |    |    |    |   |
|-------------------------------------|----|----|----|---|
| Sulphate of Ammonia                 | .. | .. | .. | 21.0 % N                                  |
| Superphosphate                      | .. | .. | .. | 16.6 <sup>(1)</sup> , 17.6 <sup>(2)</sup> |
| Muriate of Potash                   | .. | .. | .. | 51.9 <sup>(1)</sup> , 51.4 <sup>(2)</sup> |
| ( <sup>1</sup> ) Applied in Autumn. |    |    |    | ( <sup>2</sup> ) Applied in Spring.       |

### Long Period Cultivation Experiment

|                   |    |    |  |
|-------------------|----|----|--|
| Cyanamide         | .. | .. | 20.7 % N                                     |
| Nitrochalk        | .. | .. | 15.8 % N                                     |
| Superphosphate    | .. | .. | 17.6 % P <sub>2</sub> O <sub>5</sub> (Total) |
| Muriate of Potash | .. | .. | 51.4 % K <sub>2</sub> O                      |

### AVERAGE WHEAT YIELDS OF VARIOUS COUNTRIES

| Country.             | Mean yield per acre, 1926-35 cwt. | Country.                   | Mean yield per acre, 1926-35 cwt. |
|----------------------|-----------------------------------|----------------------------|-----------------------------------|
| Great Britain .. ..  | 17.9                              | Denmark .. .. .            | 22.7                              |
| England and Wales .. | 17.7                              | Argentina .. ..            | 7.1                               |
| Hertfordshire .. ..  | 16.8                              | Australia .. ..            | 6.2                               |
| France .. .. .       | 11.9                              | Canada .. .. .             | 8.3                               |
| Germany .. .. .      | 16.6                              | United States ..           | 7.3                               |
| Belgium .. .. .      | 20.7                              | U.S.S.R. (Europe and Asia) | 6.0*                              |

Note.—Figures for Great Britain, England and Hertfordshire are taken from the Ministry of Agriculture's "Agricultural Statistics," Vol. 70. Other figures from "International Year Book of Agricultural Statistics," 1929-37.

\* Excluding 1931.

### CONVERSION TABLE

|   |    |                               |
|---|----|-------------------------------|
| 1 acre (10 sq. chains or 4,840 sq. yards) | .. | 0.405 Hectare                 |
| 1 bushel (Imperial) (8 gallons)           | .. | 0.364 Hectolitre              |
| 1 lb. (pound avoirdupois)                 | .. | 0.453 Kilogramme              |
| 1 cwt. (hundredweight, 112 lb.)           | .. | 50.8 Kilogrammes              |
| 1 ton (20 cwt. or 2,240 lb.)              | .. | 1016 Kilogrammes              |
| 1 metric quintal or Doppel Zentner (Dz.)  | .. | { 100.0 Kilogrammes           |
| 1 metric ton (tonne)                      | .. | 220.46 lb.                    |
| 1 bushel per acre                         | .. | 1000 Kilogrammes              |
| 1 lb. per acre                            | .. | 0.899 Hectolitre per Hectare  |
| 1 cwt. per acre                           | .. | 1.118 Kilogrammes per Hectare |
| 1 ton per acre                            | .. | 1.256 dz. per Hectare         |
| 1 dz. per Hectare                         | .. | 25.12 dz. per Hectare         |
| 1 kg. per Hectare                         | .. | 0.796 cwt. per acre           |
|   | .. | 0.892 lb. per acre            |

In America the Winchester bushel is used=35.236 litres. 1 English bushel=1.032 American bushels. In America 1 cwt.=100 lb.

The yields of grain in the replicated experiments are given in cwt. per acre. One bushel of wheat weighs 60 lb., of barley weighs 52 lb., of oats weighs 42 lb. approximately.



METEOROLOGICAL RECORDS, 1936

|                      | Rain.                           |  | Drainage through soil. |               |               | Bright Sunshine. | Temperature (Mean). |             |                |             |
|----------------------|---------------------------------|--|------------------------|---------------|---------------|------------------|---------------------|-------------|----------------|-------------|
|                      | Total Fall 1/1000th Acre Gauge. | No. of Rainy Days (0.01 inch or more) 1/1000th Acre Gauge. | 20 ins. deep.          | 40 ins. deep. | 60 ins. deep. |                  | Max.                | Min.        | 1 ft. in gr'd. | Grass Min.  |
| 1936—                | Inches.                         | No.  | Inches.                | Inches.       | Inches.       | Hours.           | °F.                 | °F.         | °F.            | °F.         |
| Jan. ..              | 4.254                           | 21   | 3.807                  | 3.898         | 3.719         | 49.6             | 42.5                | 33.6        | 38.2           | 29.1        |
| Feb. ..              | 2.334                           | 16   | 1.842                  | 2.070         | 1.957         | 81.0             | 39.7                | 30.5        | 35.6           | 24.8        |
| Mar. ..              | 1.413                           | 15   | 0.437                  | 0.533         | 0.520         | 86.0             | 49.8                | 38.3        | 41.5           | 33.5        |
| April ..             | 1.385                           | 12   | 0.240                  | 0.274         | 0.266         | 126.8            | 48.6                | 36.4        | 43.5           | 31.0        |
| May ..               | 0.530                           | 9  | 0.000                  | 0.005         | 0.008         | 177.0            | 61.1                | 43.4        | 52.7           | 38.7        |
| June ..              | 6.338                           | 19   | 2.851                  | 2.074         | 1.892         | 182.8            | 66.0                | 50.7        | 58.7           | 46.5        |
| July ..              | 4.939                           | 22   | 1.878                  | 2.094         | 1.890         | 120.9            | 65.5                | 53.0        | 61.0           | 49.7        |
| Aug. ..              | 0.354                           | 7  | 0.023                  | 0.058         | 0.050         | 181.2            | 68.5                | 52.2        | 61.1           | 47.5        |
| Sept. ..             | 3.574                           | 19   | 1.132                  | 1.230         | 1.121         | 84.4             | 62.7                | 52.0        | 58.6           | 48.0        |
| Oct. ..              | 1.834                           | 16   | 0.620                  | 0.638         | 0.569         | 97.1             | 54.1                | 41.4        | 49.0           | 36.3        |
| Nov. ..              | 3.942                           | 18   | 3.390                  | 3.703         | 3.467         | 46.3             | 46.4                | 34.7        | 43.4           | 31.6        |
| Dec. ..              | 2.349                           | 21   | 1.744                  | 1.868         | 1.823         | 59.7             | 44.8                | 34.6        | 40.3           | 31.1        |
| <i>Total or Mean</i> | <i>33.246</i>                   | <i>195</i>   | <i>17.964</i>          | <i>18.445</i> | <i>17.282</i> | <i>1292.8</i>    | <i>54.1</i>         | <i>41.7</i> | <i>48.6</i>    | <i>37.3</i> |

RAIN AND DRAINAGE

Monthly Mean for 66 Harvest years, 1870-1 — 1935-6

|                | Rain-fall.    | Drainage.     |               |               | Drainage % of Rainfall. |               |               | Evaporation   |               |               |
|----------------|---------------|---------------|---------------|---------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
|                |               | 20-in. Gauge. | 40-in. Gauge. | 60-in. Gauge. | 20-in. Gauge.           | 40-in. Gauge. | 60-in. Gauge. | 20-in. Gauge. | 40-in. Gauge. | 60-in. Gauge. |
|                | Inches        | Inches.       | Inches.       | Inches.       | %                       | %             | %             | Inches        | Inches        | Inches        |
| Sept. ..       | 2.409         | 0.823         | 0.801         | 0.740         | 34.2                    | 33.2          | 30.7          | 1.586         | 1.608         | 1.669         |
| Oct. ..        | 3.084         | 1.737         | 1.716         | 1.590         | 56.3                    | 55.6          | 51.6          | 1.347         | 1.368         | 1.494         |
| Nov. ..        | 2.872         | 2.198         | 2.252         | 2.127         | 76.5                    | 78.4          | 74.0          | 0.674         | 0.620         | 0.745         |
| Dec. ..        | 2.819         | 2.400         | 2.499         | 2.389         | 85.1                    | 88.6          | 84.7          | 0.419         | 0.320         | 0.430         |
| Jan. ..        | 2.403         | 1.973         | 2.162         | 2.065         | 82.1                    | 90.0          | 85.9          | 0.430         | 0.241         | 0.338         |
| Feb. ..        | 2.000         | 1.479         | 1.594         | 1.521         | 74.0                    | 79.7          | 76.0          | 0.521         | 0.406         | 0.479         |
| Mar. ..        | 1.960         | 1.042         | 1.167         | 1.105         | 53.2                    | 59.5          | 56.4          | 0.918         | 0.793         | 0.855         |
| April ..       | 2.057         | 0.671         | 0.750         | 0.713         | 32.6                    | 36.5          | 34.7          | 1.386         | 1.307         | 1.344         |
| May ..         | 2.051         | 0.488         | 0.554         | 0.523         | 23.8                    | 27.0          | 25.5          | 1.563         | 1.497         | 1.528         |
| June ..        | 2.242         | 0.547         | 0.565         | 0.542         | 24.4                    | 25.2          | 24.2          | 1.695         | 1.677         | 1.700         |
| July ..        | 2.699         | 0.711         | 0.741         | 0.692         | 26.3                    | 27.4          | 25.6          | 1.988         | 1.958         | 2.007         |
| Aug. ..        | 2.562         | 0.673         | 0.687         | 0.646         | 26.3                    | 26.8          | 25.2          | 1.889         | 1.875         | 1.916         |
| <i>Year ..</i> | <i>29.158</i> | <i>14.742</i> | <i>15.488</i> | <i>14.653</i> | <i>50.6</i>             | <i>53.1</i>   | <i>50.2</i>   | <i>14.416</i> | <i>13.670</i> | <i>14.505</i> |