

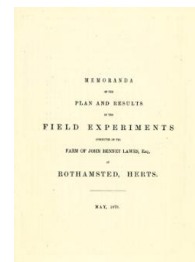
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ROTHAMSTED
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Memoranda of the Field Experiments at Rothamsted, May 1873

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Experiments on Rotation; Agdell Field

Rothamsted Research

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AGDELL FIELD.

EXPERIMENTS ON AN ACTUAL COURSE OF ROTATION—TURNIPS, BARLEY, LEGUMINOUS CROP (OR FALLOW), AND WHEAT.

These Experiments were commenced in 1848; so that the present crop (1873) is the 26th experimental one, or the second crop of the Seventh Course One-third of the land has been continuously unmanured; one-third manured with Superphosphate of Lime alone once every four years, that is for the turnip-crop commencing each course; and one-third manured (also for the turnip-crop only) with a complex manure, as described in the foot-note, No. 2.

In the Second, Third, Fourth, Fifth, and Sixth Courses, instead of clover, half of each plot was sown with beans, and the other half left fallow; for the third crop of the Seventh Course clover is again sown (spring 1873), on half of each plot, the other half being left fallow.

From half of each of the three plots the whole turnip-crop (roots and leaves) was removed; and on the other half the roots were eaten on the land by sheep, and the uneaten leaves spread and ploughed in. In the case of all the other crops, the total produce was removed from the land. The abstract of results given below relates to the portions of each plot from which the turnip-crops were entirely removed; and on which, in the later courses, beans (not fallow) replaced the clover.

(Area under experiment, about 2½ acres.)

1 lb. (pound avoird.) per acre .. = (about) 1.12 Kilogramme per Hectare, or 0.57 Zollverein Pfund. per Prussian Morgen.
 1 cwt. (hundredweight) per acre = (about) 125.5 Kilogrammes per Hectare, or 0.64 Centner per Pr. Morgen.

| Years. | Description of Crop. | PRODUCE PER ACRE. | | | | | | | | |
|--|--|------------------------------------|---------------------|--------------------------------|--|---------------------|--------------------------------|---|---------------------|--------------------------------|
| | | PLOT 1. Unmanured continuously. | | | PLOT 2. Superphosphate of Lime, ¹ alone, for the Turnip Crops only. | | | PLOT 3. Complex Manure, ² for the Turnip Crops only. | | |
| | | Corn ³ (or Roots). | Straw (or Leaf). | Total Produce. ⁴ | Corn ³ (or Roots). | Straw (or Leaf). | Total Produce. ⁴ | Corn ³ (or Roots). | Straw (or Leaf). | Total Produce. ⁴ |
| 1ST COURSE, 1848-51. | | | | | | | | | | |
| 1848 | Norfolk White Turnips | 65½ cwt. | 45½ cwt. | 111½ cwt. | 225½ cwt. | 106½ cwt. | 332 cwt. | 218 cwt. | 151½ cwt. | 369½ cwt. |
| 1849 | Barley | 44½ bush. | 2933 lbs. | 5656 lbs. | 29½ bush. | 2111 lbs. | 3841 lbs. | 29½ bush. | 2088 lbs. | 3794 lbs. |
| 1850 | Clover (calc ^d . as hay) | .. | .. | 54 cwt. | .. | .. | 57½ cwt. | .. | .. | 63 cwt. |
| 1851 | Wheat | 28½ bush. | 3431 lbs. | 5389 lbs. | 28 bush. | 3371 lbs. | 5253 lbs. | 28½ bush. | 3552 lbs. | 5500 lbs. |
| 2ND COURSE, 1852-55. | | | | | | | | | | |
| 1852 | Swedish Turnips | 26 cwt. | 4½ cwt. | 30½ cwt. | 223½ cwt. | 20½ cwt. | 243½ cwt. | 396½ cwt. | 36½ cwt. | 433 cwt. |
| 1853 | Barley | 34½ bush. | 2430 lbs. | 4465 lbs. | 29½ bush. | 1873 lbs. | 3560 lbs. | 38½ bush. | 2604 lbs. | 4873 lbs. |
| 1854 | Beans | 5½ bush. | 1055 lbs. | 1445 lbs. | 5½ bush. | 1103 lbs. | 1534 lbs. | 9½ bush. | 1355 lbs. | 2065 lbs. |
| 1855 | Wheat | 35½ bush. | 3619 lbs. | 5359 lbs. | 35½ bush. | 3525 lbs. | 5789 lbs. | 37½ bush. | 3942 lbs. | 6371 lbs. |
| 3RD COURSE, 1856-59. | | | | | | | | | | |
| 1856 | Swedish Turnips | 32 cwt. | 2½ cwt. | 34½ cwt. | 136 cwt. | 7½ cwt. | 143½ cwt. | 333½ cwt. | 12½ cwt. | 346½ cwt. |
| 1857 | Barley | 48½ bush. | 2600 lbs. | 5337 lbs. | 29½ bush. | 1475 lbs. | 3075 lbs. | 48 bush. | 2435 lbs. | 5168 lbs. |
| 1858 | Beans | 6½ bush. | 1100 lbs. | 1515 lbs. | 6½ bush. | 1155 lbs. | 1605 lbs. | 12½ bush. | 1520 lbs. | 2357 lbs. |
| 1859 | Wheat | 35½ bush. | 4030 lbs. | 6262 lbs. | 34½ bush. | 3930 lbs. | 6120 lbs. | 38½ bush. | 4610 lbs. | 7154 lbs. |
| 4TH COURSE, 1860-63. | | | | | | | | | | |
| 1860 | Swedish Turnips | 1 cwt. | (6½ lbs.) | 1 cwt. | 29½ cwt. | 1½ cwt. | 30½ cwt. | 87½ cwt. | 3½ cwt. | 90½ cwt. |
| 1861 | Barley | 38½ bush. | 2522 lbs. | 4718 lbs. | 30½ bush. | 2000 lbs. | 3775 lbs. | 60½ bush. | 3940 lbs. | 5148 lbs. |
| 1862 | Beans | 23 bush. | 1840 lbs. | 2661 lbs. | 29½ bush. | 2150 lbs. | 4040 lbs. | 43½ bush. | 2920 lbs. | 5990 lbs. |
| 1863 | Wheat | 44½ bush. | 3467 lbs. | 6350 lbs. | 34½ bush. | 3390 lbs. | 5619 lbs. | 46½ bush. | 4697 lbs. | 7626 lbs. |
| 5TH COURSE, 1864-67. | | | | | | | | | | |
| 1864 | Swedish Turnips | 8½ cwt. | 0½ cwt. | 9½ cwt. | 68 cwt. | 4½ cwt. | 72½ cwt. | 176½ cwt. | 8½ cwt. | 185 cwt. |
| 1865 | Barley | 39 bush. | 2154 lbs. | 4182 lbs. | 33½ bush. | 1615 lbs. | 3394 lbs. | 47½ bush. | 2595 lbs. | 5148 lbs. |
| 1866 | Beans | 10½ bush. | 1013 lbs. | 1629 lbs. | 7½ bush. | 978 lbs. | 1463 lbs. | 20½ bush. | 1990 lbs. | 3343 lbs. |
| 1867 | Wheat | 21 bush. | 2143 lbs. | 3473 lbs. | 19½ bush. | 1966 lbs. | 3222 lbs. | 22½ bush. | 3003 lbs. | 4567 lbs. |
| 6TH COURSE, 1868-71. | | | | | | | | | | |
| 1868 | Swedish Turnips | Failed, and ploughed up. | | | Failed, and ploughed up. | | | Failed, and ploughed up. | | |
| 1869 | Barley | 24½ bush. | 1948 lbs. | 3358 lbs. | 28½ bush. | 2025 lbs. | 3636 lbs. | 42½ bush. | 3309 lbs. | 5800 lbs. |
| 1870 | Beans | 13½ bush. | 738 lbs. | 1591 lbs. | 15½ bush. | 768 lbs. | 1778 lbs. | 24½ bush. | 1656 lbs. | 2664 lbs. |
| 1871 | Wheat | 20½ bush. | 2799 lbs. | 4092 lbs. | 23½ bush. | 3048 lbs. | 4521 lbs. | 23 bush. | 3440 lbs. | 4883 lbs. |
| SUMMARY—AVERAGE OF THE 6 COURSES, 1848-1871. | | | | | | | | | | |
| 1848, '52, '56, '60, '64 | Swedish Turnips | 26½ cwt. | 10½ cwt. | 37½ cwt. | 136½ cwt. | 28 cwt. | 164½ cwt. | 242½ cwt. | 42½ cwt. | 285 cwt. |
| 1849, '53, '57, '61, '65, '69 | Barley | 38½ bush. | 2440 lbs. | 4610 lbs. | 30 bush. | 1850 lbs. | 3555 lbs. | 44½ bush. | 2829 lbs. | 5362 lbs. |
| 1850, '54, '58, '62, '66, '70 | { Clover, 1850 (calc ^d . as hay) Beans | .. | .. | 54 cwt. | .. | .. | 57½ cwt. | .. | .. | 63 cwt. |
| 1851, '55, '59, '63, '67, '71 | Wheat | 12½ bush. | 1149 lbs. | 1990 lbs. | 13 bush. | 1231 lbs. | 2084 lbs. | 22½ bush. | 1840 lbs. | 3284 lbs. |
| | | 30½ bush. | 3249 lbs. | 5238 lbs. | 29½ bush. | 3205 lbs. | 5087 lbs. | 33½ bush. | 3574 lbs. | 6017 lbs. |

(1) First Course—100 lbs. Bone-ash, and 100 lbs. Sulphuric Acid (sp. gr. 1.7); Second Course—160 lbs. Bone-ash, 120 lbs. Sulphuric Acid; Third, Fourth, Fifth, Sixth, and Seventh Courses—200 lbs. Bone-ash, and 150 lbs. Sulphuric Acid, per acre.

(2) First Course—100 lbs. Pearl-ash, 100 lbs. Bone-ash, 100 lbs. Sulphuric Acid, 100 lbs. Sulphate of Ammonia, 100 lbs. Muriate of Ammonia, and 1000 lbs. Rape-Cake; Second Course—300 lbs. Sulphate of Potass, 100 lbs. Sulphate of Soda, 100 lbs. Sulphate of Magnesia, 160 lbs. Bone-ash, 120 lbs. Sulphuric Acid, 100 lbs. Sulphate of Ammonia, 100 lbs. Muriate

of Ammonia, and 2000 lbs. Rape-cake; Third, Fourth, Fifth, Sixth, and Seventh Courses—300 lbs. Sulphate of Potass, 200 lbs. Sulphate of Soda, 100 lbs. Sulphate of Magnesia, 200 lbs. Bone-ash, 150 lbs. Sulphuric Acid, 100 lbs. Sulphate of Ammonia, 100 lbs. Muriate of Ammonia, and 2000 lbs. Rape-cake, per acre.

(3) The quantities given in Bushels represent the Dressed Corn only.

(4) The "Total Produce" of the Corn-crops includes Dressed Corn, Offal Corn, and Total Straw.