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# Memoranda of the Plan and Results of the Rothamsted Field Experiments, May 1866



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## Rotations: Agdell Field

### Rothamsted Research

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

These Experiments were commenced in 1848; so that the present crop (1866) is the 19th experimental one, or the third crop of the Fifth 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, and Fourth Courses, instead of clover, half of each plot was sown with beans, and the other half 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 were 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 Fr. Morgen.

| Years.               | Description of Crop.   | PRODUCE PER ACRE.                  |                     |                   |                                                                                       |                     |                   |                                                                     |                     |                   |           |           |
|----------------------|------------------------|------------------------------------|---------------------|-------------------|---------------------------------------------------------------------------------------|---------------------|-------------------|---------------------------------------------------------------------|---------------------|-------------------|-----------|-----------|
|                      |                        | PLOT 1.<br>Unmanured continuously. |                     |                   | PLOT 2.<br>Superphosphate of Lime <sup>o</sup> , alone, for the<br>Turnip Crops only. |                     |                   | PLOT 3.<br>Complex Manure <sup>o</sup> , for the Turnip Crops only. |                     |                   |           |           |
|                      |                        | Corn<br>(or roots).                | Straw<br>(or Leaf). | Total<br>Produce. | Corn<br>(or Roots).                                                                   | Straw<br>(or Leaf). | Total<br>Produce. | Corn<br>(or Roots).                                                 | Straw<br>(or Leaf). | Total<br>Produce. |           |           |
|                      |                        | 1ST COURSE, 1848-51.               |                     |                   |                                                                                       |                     |                   |                                                                     |                     |                   |           |           |
| 1848                 | Swedish Turnips        | ..                                 | ..                  | 175½ cwt.         | 19½ cwt.                                                                              | 195 cwt.            | 292 cwt.          | 35 cwt.                                                             | 327 cwt.            | 394½ cwt.         | 46½ cwt.  | 441 cwt.  |
| 1849                 | Barley                 | ..                                 | ..                  | 1706 lbs.         | 2088 lbs.                                                                             | 3794 lbs.           | 1705 lbs.         | 1870 lbs.                                                           | 3575 lbs.           | 2673 lbs.         | 2983 lbs. | 5656 lbs. |
| 1850                 | Clover (weighed green) | ..                                 | ..                  | ..                | ..                                                                                    | 1944 cwt.           | ..                | ..                                                                  | 139½ cwt.           | ..                | ..        | 219½ cwt. |
| 1851                 | Wheat                  | ..                                 | ..                  | ..                | 3431 lbs.                                                                             | 5389 lbs.           | 1882 lbs.         | 3371 lbs.                                                           | 5253 lbs.           | 1943 lbs.         | 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                 | ..                                 | ..                  | 2035 lbs.         | 2430 lbs.                                                                             | 4465 lbs.           | 1657 lbs.         | 1873 lbs.                                                           | 3560 lbs.           | 2269 lbs.         | 2604 lbs. | 4873 lbs. |
| 1854                 | Beans                  | ..                                 | ..                  | 390 lbs.          | 1055 lbs.                                                                             | 1445 lbs.           | 431 lbs.          | 1103 lbs.                                                           | 1534 lbs.           | 710 lbs.          | 1355 lbs. | 2065 lbs. |
| 1855                 | Wheat                  | ..                                 | ..                  | 2240 lbs.         | 3619 lbs.                                                                             | 5859 lbs.           | 2264 lbs.         | 3525 lbs.                                                           | 5789 lbs.           | 2429 lbs.         | 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                 | ..                                 | ..                  | 2737 lbs.         | 2600 lbs.                                                                             | 5337 lbs.           | 1601 lbs.         | 1475 lbs.                                                           | 3076 lbs.           | 2733 lbs.         | 2435 lbs. | 5168 lbs. |
| 1858                 | Beans                  | ..                                 | ..                  | 415 lbs.          | 1100 lbs.                                                                             | 1515 lbs.           | 450 lbs.          | 1155 lbs.                                                           | 1605 lbs.           | 837 lbs.          | 1520 lbs. | 2357 lbs. |
| 1859                 | Wheat                  | ..                                 | ..                  | 2232 lbs.         | 4030 lbs.                                                                             | 6262 lbs.           | 2190 lbs.         | 3930 lbs.                                                           | 6120 lbs.           | 2544 lbs.         | 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                 | ..                                 | ..                  | 2196 lbs.         | 2522 lbs.                                                                             | 4718 lbs.           | 1775 lbs.         | 2000 lbs.                                                           | 3775 lbs.           | 3451 lbs.         | 3940 lbs. | 7391 lbs. |
| 1862                 | Beans                  | ..                                 | ..                  | 1821 lbs.         | 1840 lbs.                                                                             | 3661 lbs.           | 1800 lbs.         | 2150 lbs.                                                           | 4040 lbs.           | 2710 lbs.         | 3280 lbs. | 5990 lbs. |
| 1863                 | Wheat                  | ..                                 | ..                  | 2883 lbs.         | 3467 lbs.                                                                             | 6350 lbs.           | 2229 lbs.         | 3390 lbs.                                                           | 5619 lbs.           | 2929 lbs.         | 4697 lbs. | 7626 lbs. |
| 5TH COURSE, 1864-67. |                        |                                    |                     |                   |                                                                                       |                     |                   |                                                                     |                     |                   |           |           |
| 1864                 | Swedish Turnips        | ..                                 | ..                  | 8½ cwt.           | 3½ cwt.                                                                               | 9½ cwt.             | 68 cwt.           | 4½ cwt.                                                             | 72½ cwt.            | 176½ cwt.         | 8½ cwt.   | 185 cwt.  |
| 1865                 | Barley                 | ..                                 | ..                  | 2028 lbs.         | 2154 lbs.                                                                             | 4182 lbs.           | 1779 lbs.         | 1615 lbs.                                                           | 3394 lbs.           | 2553 lbs.         | 2595 lbs. | 5148 lbs. |
| 1866                 | Beans                  | ..                                 | ..                  | 676 lbs.          | 1013 lbs.                                                                             | 1689 lbs.           | 485 lbs.          | 978 lbs.                                                            | 1463 lbs.           | 1353 lbs.         | 1990 lbs. | 3243 lbs. |
| 1867                 | Wheat                  | ..                                 | ..                  | 1330 lbs.         | 2143 lbs.                                                                             | 3473 lbs.           | 1256 lbs.         | 1966 lbs.                                                           | 3222 lbs.           | 1564 lbs.         | 3003 lbs. | 4567 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 and Fifth 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, and 1000 lbs. Muriate of Ammonia; Second Course—300 lbs. Sulphate of Potash, 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 and Fifth Courses—300 lbs. Sulphate of Potash, 200 lbs. Bone-ash, 150 lbs. Sulphuric Acid, 100 lbs. Sulphate of Ammonia, and 2000 lbs. Muriate of Ammonia, and 2000 lbs. Rape-cake, *per acre*.