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ROTHAMSTED  
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# Memoranda of the Field Experiments at Rothamsted: May 1879



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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 (1879) is the 32nd experimental one, or the fourth crop of the Eighth 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, clover was sown, but failed; and in them, and in the Fifth and Sixth Courses, beans were taken instead, on half of each plot, and the other half left fallow; for the third crop of the Seventh Course clover was again sown (spring 1873), on half of each plot, and gave three cuttings; the other half of each being left fallow. In the eighth course beans were again grown.

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 the results given below relates to the portions of each plot from which the turnip-crops were entirely removed; and on which, in the second, third, fourth, fifth, sixth, and eighth 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, <sup>1</sup> alone, for the Turnip Crops only.			Plot 3. Complex Manure, <sup>2</sup> for the Turnip Crops only.		
		Corn <sup>3</sup> (or Roots).	Straw (or Leaf).	Total Produce. <sup>4</sup>	Corn <sup>3</sup> (or Roots).	Straw (or Leaf).	Total Produce. <sup>4</sup>	Corn <sup>3</sup> (or Roots).	Straw (or Leaf).	Total Produce. <sup>4</sup>
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.	2983 lbs.	5636 lbs.	29½ bush.	2111 lbs.	3841 lbs.	28½ bush.	2083 lbs.	3794 lbs.
1850	Clover (calc. as hay)	..	..	54 cwt.	..	..	57½ cwt.	..	..	63 cwt.
1851	Wheat	22½ bush.	3431 lbs.	5399 lbs.	28 bush.	3371 lbs.	5253 lbs.	28½ bush.	3552 lbs.	5500 lbs.
2ND COURSE, 1852-55.										
1852	Swedish Turnips	26 cwt.	44 cwt.	30½ cwt.	223½ cwt.	20½ cwt.	243½ cwt.	396½ cwt.	36½ cwt.	433 cwt.
1853	Barley	34½ bush.	2430 lbs.	4465 lbs.	28½ bush.	2841 lbs.	3560 lbs.	32½ bush.	2604 lbs.	4873 lbs.
1854	Beans	5½ bush.	1055 lbs.	1445 lbs.	5½ bush.	1103 lbs.	1534 lbs.	9½ bush.	1553 lbs.	2065 lbs.
1855	Wheat	33½ bush.	3619 lbs.	5839 lbs.	33½ bush.	3525 lbs.	5789 lbs.	37½ bush.	3943 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.	28½ bush.	1475 lbs.	3076 lbs.	43 bush.	2433 lbs.	5165 lbs.
1858	Beans	6½ bush.	1100 lbs.	1515 lbs.	6½ bush.	1155 lbs.	1605 lbs.	12½ bush.	1500 lbs.	2357 lbs.
1859	Wheat	33½ bush.	4039 lbs.	6262 lbs.	34½ bush.	3930 lbs.	6120 lbs.	33½ bush.	4610 lbs.	7154 lbs.
4TH COURSE, 1860-63.										
1860	Swedish Turnips	1 cwt.	(64 lbs.)	1 cwt.	294 cwt.	1½ cwt.	304 cwt.	87½ cwt.	3½ cwt.	90½ cwt.
1861	Barley	35½ bush.	2372 lbs.	4713 lbs.	30½ bush.	2000 lbs.	3775 lbs.	60½ bush.	3900 lbs.	7391 lbs.
1862	Beans	29 bush.	1840 lbs.	2661 lbs.	29½ bush.	2150 lbs.	4040 lbs.	42½ bush.	3280 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.	63 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.	973 lbs.	1463 lbs.	20½ bush.	1990 lbs.	3443 lbs.
1867	Wheat	21 bush.	2143 lbs.	3473 lbs.	19½ bush.	1906 lbs.	3222 lbs.	23½ 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.	1945 lbs.	3338 lbs.	28½ bush.	2025 lbs.	3686 lbs.	42½ bush.	3309 lbs.	5800 lbs.
1870	Beans	13½ bush.	738 lbs.	1591 lbs.	15½ bush.	768 lbs.	1778 lbs.	24½ bush.	1056 lbs.	2664 lbs.
1871	Wheat	20½ bush.	2799 lbs.	4092 lbs.	23½ bush.	3049 lbs.	4521 lbs.	23 bush.	3440 lbs.	4893 lbs.
7TH COURSE, 1872-75.										
1872	Swedish Turnips	34½ cwt.	8½ cwt.	42½ cwt.	176½ cwt.	17½ cwt.	193 cwt.	339½ cwt.	35½ cwt.	375½ cwt.
1873	Barley	23½ bush.	1343 lbs.	2717 lbs.	20½ bush.	1565 lbs.	2875 lbs.	31½ bush.	1723 lbs.	3573 lbs.
1874	Clover	..	..	31½ cwt.	..	..	52½ cwt.	..	..	84½ cwt.
1875	Wheat	21½ bush.	2420 lbs.	3784 lbs.	22½ bush.	3536 lbs.	5329 lbs.	31½ bush.	4685 lbs.	6999 lbs.
8TH COURSE, 1876-79.										
1876	Swedish Turnips	17½ cwt.	5 cwt.	22½ cwt.	184½ cwt.	22½ cwt.	217 cwt.	356 cwt.	53½ cwt.	411½ cwt.
1877	Barley	24½ bush.	1291 lbs.	2623 lbs.	24½ bush.	1174 lbs.	2538 lbs.	34½ bush.	1918 lbs.	3890 lbs.
1878	Beans	8½ bush.	740 lbs.	1301 lbs.	7½ bush.	1045 lbs.	1857 lbs.	20½ bush.	1635 lbs.	2963 lbs.
1879	Wheat	..	..	..	..	..	..	..	..	..

SUMMARY—AVERAGE OF THE FIRST 7 COURSES, 1848-1875.

Years	Description of Crop	Plot 1	Plot 2	Plot 3
1848, '52, '56, '60, '64, '72	Swedish Turnips	27½ cwt.	10½ cwt.	384 cwt.
1849, '53, '57, '61, '65, '69, '73	Barley	36½ bush.	2233 lbs.	4948 lbs.
1850, '54, '58, '62, '66, '70, '74	(Clover, 1850 and '74) (calc. as hay)	..	..	42½ cwt.
1851, '55, '59, '63, '67, '71, '75	Wheat	124 bush.	3131 lbs.	5030 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, Seventh, and Eighth 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 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, Straw, and Chaff.