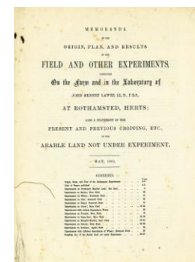


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ROTHAMSTED  
RESEARCH

# Memoranda of the Field Experiments at Rothamsted: May 1881



[Full Table of Content](#)

## 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 (1881) is the 34th experimental one, or the second crop of the Ninth 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 in 1874; the other half of each being left fallow. In the Eighth Course beans were again grown. For the Ninth Course (Spring 1881) clover has been sown. 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	63½ cwt.	45½ cwt.	111½ cwt.	23½ cwt.	106½ cwt.	32 cwt.	218 cwt.	151½ cwt.	369½ cwt.
1849	Barley . . . . .	44½ bush.	293½ lbs.	565½ lbs.	29½ bush.	211½ lbs.	384½ lbs.	38½ bush.	208½ lbs.	374½ lbs.
1850	Clover (calcd. as hay) . . . . .	..	..	5½ cwt.	..	..	57½ cwt.	..	..	374½ lbs.
1851	Wheat . . . . .	2½ bush.	343½ lbs.	539 lbs.	2½ bush.	337½ lbs.	533½ lbs.	2½ bush.	352½ lbs.	530 lbs.
2ND COURSE, 1852-55.										
1852	Swedish Turnips . . . . .	26 cwt.	4½ cwt.	30½ cwt.	22¾ cwt.	90½ cwt.	243½ cwt.	39½ cwt.	36½ cwt.	433 cwt.
1853	Barley . . . . .	34½ bush.	2450 lbs.	4465 lbs.	29½ bush.	1873 lbs.	3560 lbs.	38½ bush.	2604 lbs.	4873 lbs.
1854	Beans . . . . .	5½ bush.	1655 lbs.	1445 lbs.	5½ bush.	1103 lbs.	1534 lbs.	9½ bush.	1353 lbs.	2065 lbs.
1855	Wheat . . . . .	33½ bush.	3619 lbs.	5839 lbs.	33½ bush.	3395 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.	147½ cwt.	333½ cwt.	12½ cwt.	346½ cwt.
1857	Barley . . . . .	48½ bush.	2600 lbs.	4718 lbs.	337 lbs.	1475 lbs.	3076 lbs.	48 bush.	2435 lbs.	5165 lbs.
1858	Beans . . . . .	6½ bush.	1100 lbs.	1515 lbs.	6½ bush.	1155 lbs.	1605 lbs.	12 bush.	1320 lbs.	2357 lbs.
1859	Wheat . . . . .	35½ bush.	4030 lbs.	6262 lbs.	34½ bush.	3930 lbs.	6120 lbs.	39½ bush.	4610 lbs.	7154 lbs.
4TH COURSE, 1860-63.										
1860	Swedish Turnips . . . . .	1 cwt.	(64 lbs.)	1 cwt.	2¾ cwt.	1½ cwt.	30½ cwt.	27½ cwt.	3½ cwt.	90½ cwt.
1861	Barley . . . . .	35½ bush.	2522 lbs.	4718 lbs.	308 bush.	2000 lbs.	3775 lbs.	6½ bush.	3040 lbs.	7391 lbs.
1862	Beans . . . . .	29 bush.	1840 lbs.	3661 lbs.	29 bush.	2150 lbs.	4640 lbs.	12 bush.	1320 lbs.	2357 lbs.
1863	Wheat . . . . .	34½ bush.	3467 lbs.	5825 lbs.	34½ bush.	3390 lbs.	5619 lbs.	48½ bush.	3280 lbs.	5990 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.	331 bush.	1618 lbs.	3394 lbs.	47½ bush.	2395 lbs.	5148 lbs.
1866	Beans . . . . .	10½ bush.	1013 lbs.	1629 lbs.	7½ bush.	975 lbs.	1463 lbs.	20½ bush.	1990 lbs.	3143 lbs.
1867	Wheat . . . . .	21 bush.	2143 lbs.	3473 lbs.	19½ bush.	1866 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.	1948 lbs.	3338 lbs.	284 bush.	2025 lbs.	3686 lbs.	42½ bush.	3209 lbs.	5800 lbs.
1870	Beans . . . . .	19½ bush.	738 lbs.	1391 lbs.	15½ bush.	768 lbs.	1778 lbs.	24½ bush.	1656 lbs.	2664 lbs.
1871	Wheat . . . . .	20½ bush.	2799 lbs.	4092 lbs.	23½ bush.	3098 lbs.	4521 lbs.	24 bush.	3440 lbs.	4942 lbs.
7TH COURSE, 1872-75.										
1872	Swedish Turnips . . . . .	34½ cwt.	8½ cwt.	42½ cwt.	170½ cwt.	17½ cwt.	188 cwt.	339½ cwt.	3½ cwt.	375½ cwt.
1873	Barley . . . . .	23½ bush.	1343 lbs.	2717 lbs.	20½ bush.	1555 lbs.	2875 lbs.	31½ bush.	1723 lbs.	3573 lbs.
1874	Clover . . . . .	..	..	31½ cwt.	..	..	52½ cwt.	..	..	84½ cwt.
1875	Wheat . . . . .	21½ bush.	2430 lbs.	3784 lbs.	28½ bush.	3536 lbs.	5328 lbs.	31½ bush.	4685 lbs.	6639 lbs.
8TH COURSE, 1876-79.										
1876	Swedish Turnips . . . . .	17½ cwt.	5 cwt.	22½ cwt.	18¾ cwt.	284 cwt.	216½ cwt.	356 cwt.	55½ cwt.	411½ cwt.
1877	Barley . . . . .	23½ 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.	1557 lbs.	20½ bush.	1655 lbs.	2963 lbs.
1879	Wheat . . . . .	10½ bush.	1324 lbs.	1987 lbs.	14½ bush.	1771 lbs.	2729 lbs.	13 bush.	1658 lbs.	2493 lbs.
9TH COURSE, 1880-83.										
1880	Swedish Turnips . . . . .	14 cwt.	2½ cwt.	16½ cwt.	199½ cwt.	114 cwt.	211½ cwt.	439½ cwt.	43½ cwt.	482½ cwt.
1881	Barley . . . . .	..	..	..	..	..	..	..	..	..
1882	Clover or Beans . . . . .	..	..	..	..	..	..	..	..	..
1883	Wheat . . . . .	..	..	..	..	..	..	..	..	..

SUMMARY—AVERAGE OF THE FIRST 8 COURSES, 1848-1879.

1848, '52, '56, '60, '64, '72, '78	} Swedish Turnips . . . . .	26½ cwt.	9½ cwt.	35½ cwt.	148½ cwt.	26½ cwt.	175½ cwt.	272½ cwt.	43½ cwt.	315½ cwt.
1849, '53, '57, '61, '65, '69, '73, '77		} Barley . . . . .	34½ bush.	2159 lbs.	4132 lbs.	284 bush.	1730 lbs.	3346 lbs.	41½ bush.	2577 lbs.
1850, '54, '58, '62, '66, '70, '74, '78	} Clover, 1850 and '74 } { (calcd. as hay) . . . . .	..	..	42½ cwt.	..	..	55 cwt.	..	..	73½ cwt.
1851, '55, '59, '63, '67, '71, '75, '79		} Beans . . . . .	12½ bush.	1081 lbs.	1867 lbs.	12½ bush.	1200 lbs.	1996 lbs.	21½ bush.	1809 lbs.
	} Wheat . . . . .	25½ bush.	2905 lbs.	4559 lbs.	27½ bush.	3067 lbs.	4823 lbs.	30½ bush.	3693 lbs.	5669 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, Eighth, and Ninth 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, 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, Straw, and Chaff.