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Rothamsted Research

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EXPERIMENTS ON WHEAT ALTERNATED WITH FALLOW, AND WHEAT GROWN CONTINUOUSLY.

The results given in the following Table show the produce of Wheat obtained on the Rothamsted soil for many years in succession, after bare fallow, compared with that of wheat grown continuously year after year on the same land, without the intervention of fallow; in both cases without manure.

Hoos-field, in which the experiments on alternate wheat and fallow are conducted, adjoins *Broadwalk-field*, in which wheat has now been grown continuously without manure (also with different descriptions of manure), for 55 years in succession; and the produce of the unmanured plot of that field, is compared with that grown in alternation with fallow, also without manure, in *Hoos-field*.

The description of seed sown has been the same in the two fields in the corresponding years; namely—for the crop of 1852 "Red Cluster"; for 28 years, 1854 to 1881 inclusive, "Red Rostock"; and for 1882, and since, "Club" or "Square Head" (Red).

During the first or preliminary period of 5 years, 1851-1855, the cropping of the acre set apart for the experiment on wheat alternated with fallow was as follows:—1851, Fallow (after wheat in 1850); 1852, Wheat; 1853, Fallow; 1854, Wheat; 1855, half Fallow, and half Wheat. From that time to the present the respective halves have been alternately fallow and wheat, giving therefore a crop of wheat succeeding fallow, on half the acre each year.

In the upper division of the Table are given the results for each of the five years of the preliminary period; and in the main division are recorded the results for each individual year of the exact experiment, from 1856 up to the present time.

In the first column of each main vertical division of the Table is given the produce *per* individual year of one exact experiment, from 1800 up to the present time. (Area under ex

	Dressed Grain.			Weight per Bushel.			Total Grain.			Total Straw.			Total Produce (Grain and Straw).		
	Wheat after Fallow each year.	Wheat after Fallow each year.	After + or - Wheat.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	
PRELIMINARY PERIOD.															
1851	Bushels. 15 $\frac{1}{2}$	Bushels. 15 $\frac{1}{2}$	Bushels. 15 $\frac{1}{2}$	lbs. 61·1	lbs. 56·6	lbs. 56·6	lbs. 1083	lbs. -1083	lbs. 1627	lbs. -1627	lbs. 2710	lbs. 2710	lbs. 2710	lbs. 1851	
1852	Fallow 37	Fallow 37	Fallow 37	lbs. 53·0	lbs. 51·6	lbs. 51·6	lbs. 860	lbs. -1228	lbs. 1597	lbs. -1597	lbs. 7022	lbs. 7022	lbs. 7022	lbs. 1852	
1853	Fallow 42	Fallow 42	Fallow 42	lbs. 60·5	lbs. 45·9	lbs. 45·9	lbs. 359	lbs. -359	lbs. 1413	lbs. -1413	lbs. 7254	lbs. 7254	lbs. 7254	lbs. 1853	
1854	Fallow 17 $\frac{3}{4}$	Fallow 17 $\frac{3}{4}$	Fallow 17 $\frac{3}{4}$	lbs. 59·2	lbs. 59·2	lbs. 59·2	lbs. 1072	lbs. +8	lbs. 1734	lbs. -53	lbs. 2859	lbs. 2859	lbs. 2859	lbs. 1854	
1855	Fallow 17 $\frac{3}{4}$	Fallow 17 $\frac{3}{4}$	Fallow 17 $\frac{3}{4}$	lbs. 59·2	lbs. 59·2	lbs. 59·2	lbs. 1072	lbs. +8	lbs. 1734	lbs. -53	lbs. 2859	lbs. 2859	lbs. 2859	lbs. 1855	
PERIOD OF EXACT COMPARISON.															
1856	Bushels. 21 $\frac{3}{4}$	Bushels. 14 $\frac{1}{2}$	Bushels. 7 $\frac{1}{2}$	lbs. 60·0	lbs. 54·3	lbs. 54·3	lbs. 892	lbs. +496	lbs. 2113	lbs. 1558	lbs. +555	lbs. 3501	lbs. 2450	lbs. +1051	
1857	Fallow 38	Fallow 20	Fallow 18	lbs. 58·4	lbs. 58·3	lbs. 58·3	lbs. 1236	lbs. +1063	lbs. 3075	lbs. 1577	lbs. +1498	lbs. 5874	lbs. 2813	lbs. +2561	
1858	Fallow 25 $\frac{1}{2}$	Fallow 18	Fallow 15	lbs. 60·6	lbs. 60·4	lbs. 60·4	lbs. 1141	lbs. +489	lbs. 2468	lbs. 1670	lbs. +798	lbs. 4098	lbs. 2811	lbs. +1287	
1859	Fallow 34	Fallow 18 $\frac{1}{2}$	Fallow 15 $\frac{1}{2}$	lbs. 55·0	lbs. 52·5	lbs. 52·5	lbs. 925	lbs. 3686	lbs. 2175	lbs. +1511	lbs. 5662	lbs. 3226	lbs. 2436	lbs. 1859	
1860	Fallow 121	Fallow 121	Fallow 121	lbs. 54·8	lbs. 52·6	lbs. 52·6	lbs. 697	lbs. 738	lbs. -41	lbs. 1926	lbs. 1459	lbs. 1923	lbs. 2197	lbs. -274	
1861	Fallow 171	Fallow 11 $\frac{1}{2}$	Fallow 6 $\frac{1}{2}$	lbs. 58·8	lbs. 57·4	lbs. 57·4	lbs. 1145	lbs. 736	lbs. +409	lbs. 2072	lbs. 1254	lbs. 3217	lbs. 1990	lbs. +1227	
1862	Fallow 171	Fallow 11 $\frac{1}{2}$	Fallow 6 $\frac{1}{2}$	lbs. 57·1	lbs. 57·8	lbs. 57·8	lbs. 996	lbs. +365	lbs. 2294	lbs. 1713	lbs. +581	lbs. 3655	lbs. 2709	lbs. +946	
1863	Fallow 321	Fallow 171	Fallow 15 $\frac{1}{2}$	lbs. 61·4	lbs. 62·7	lbs. 62·7	lbs. 1127	lbs. +963	lbs. 2900	lbs. 1600	lbs. +1300	lbs. 4990	lbs. 2727	lbs. +2263	
1864	Fallow 31	Fallow 162	Fallow 14 $\frac{1}{2}$	lbs. 61·7	lbs. 62·0	lbs. 62·0	lbs. 1078	lbs. +927	lbs. 2746	lbs. 1350	lbs. +1396	lbs. 4751	lbs. 2428	lbs. +2323	
1865	Fallow 241	Fallow 131	Fallow 11	lbs. 57·6	lbs. 62·0	lbs. 62·0	lbs. 828	lbs. +612	lbs. 2150	lbs. 1033	lbs. +1117	lbs. 3590	lbs. 1866	lbs. +1729	

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1866	10 1/2	12 1/2	1	10 1/2	58.5	61.3	653	777	124	1146	1269	123	1799	2046	- 247	1866
1867	9 1/2	8 1/2	+	0 1/2	58.2	56.1	616	532	+	1126	973	+	1742	1805	+ 257	1867
1868	25	12 1/2	+	8 3/4	63.4	61.0	1656	1054	+	2398	973	+	4054	2027	+ 297	1868
1869	10 1/2	14 1/2	+	4	60.1	56.1	655	848	+	1019	1350	-	1674	2198	- 524	1869
1870	17 1/2	15	+	2 1/2	62.5	61.8	1101	956	+	1282	1046	+	2383	2002	+ 851	1870
1871	9 1/2	10 1/2	+	0	58.5	54.8	605	615	+	1287	1100	+	1892	1715	+ 177	1871
1872	12 1/2	10 1/2	+	2	58.3	59.0	780	705	-	1307	1152	+	2087	1857	+ 230	1872
1873	11 1/2	11 1/2	-	10	42.0	57.0	181	701	+	875	902	-	1056	1603	- 547	1873
1874	21 1/2	11 1/2	+	9	60.0	58.3	1370	694	+	2000	990	+	3370	1684	+ 1686	1874
1875	16 1/2	8 1/2	+	7 1/2	57.2	60.0	993	567	+	1725	1008	+	2718	1575	+ 1143	1875
1876	10 1/2	8 1/2	+	2 1/2	58.7	59.0	635	500	+	790	642	+	1425	1142	+	1876
1877	10 1/2	12 1/2	+	7 1/2	60.5	58.9	649	543	+	829	748	+	1478	1291	+	1877
1878	19 1/2	4 1/2	+	1 1/2	57.9	59.0	1171	776	+	1654	1081	+	2925	1857	+	1878
1879	6	11 1/2	+	3 1/2	55.6	52.5	379	330	+	808	763	+	1187	1093	+	1879
1880	15 1/2	11 1/2	+	1 1/2	56.9	56.9	937	689	+	1665	1146	+	2602	1838	+	1880
1881	12 1/2	11 1/2	-	1 1/2	54.6	58.0	748	863	-	897	1149	+	1645	2009	+	1881
1882	11 1/2	11 1/2	+	0 1/2	58.6	58.7	719	679	+	1085	1095	-	1804	1774	+	1882
1883	18 1/2	13 1/2	+	4	61.2	61.2	1160	872	+	1301	1006	+	2461	1878	+	1883
1884	20 1/2	13	+	7 1/2	60.2	62.1	1240	824	+	1544	905	+	2784	1729	+	1884
1885	23	15 1/2	+	7 1/2	57.9	59.0	1351	925	+	1812	1137	+	3163	2062	+	1885
1886	9 1/2	9	+	0 1/2	62.2	61.5	588	564	+	657	570	+	1345	1134	+	1886
1887	19 1/2	14 1/2	+	4 1/2	59.9	59.8	1153	906	+	1212	895	+	2365	1801	+	1887
1888	12 1/2	10	+	2 1/2	56.1	58.8	735	614	+	1239	901	+	1974	1515	+	1888
1889	13	12 1/2	+	0 1/2	59.5	59.8	796	743	+	916	902	+	1712	1645	+	1889
1890	17 1/2	14 1/2	+	3 1/2	59.8	59.4	1088	849	+	1657	1004	+	2745	1853	+	1890
1891	23 1/2	13 1/2	+	9 1/2	58.9	57.4	1404	828	+	2241	1314	+	3645	2142	+	1891
1892	11 1/2	9 1/2	+	2 1/2	60.2	59.6	731	589	+	1108	836	+	1839	1425	+	1892
1893	13 1/2	9 1/2	+	3 1/2	62.4	62.7	870	642	+	854	609	+	1251	414	+	1893
1894	15 1/2	18	-	2 1/2	59.7	60.2	953	1121	-	168	1487	+	2436	2608	-	1894
1895	15 1/2	10	+	5 1/2	62.2	62.5	978	664	+	1151	720	+	2129	1384	+	1895
1896	16 1/2	16 1/2	-	0 1/2	60.7	61.4	1020	1087	-	1312	1309	+	2332	2396	-	1896
1897	7	8 1/2	-	1 1/2	59.5	60.3	460	592	-	710	867	-	1170	1459	-	1897

AVERAGES—PRODUCE AFTER FALLOW RECKONED AT THE YIELD PER ACRE OF THE HALF IN CROP EACH YEAR.					
5 yrs. 1851-'55	10 yrs. 1856-'65	10 yrs. 1866-'75	10 yrs. 1876-'85	10 yrs. 1886-'95	40 yrs. 1856-'95
19 1/2	26 1/2	13 1/2	14 1/2	15 1/2	17 1/2
14 1/2	15 1/2	11 1/2	11 1/2	12 1/2	12 1/2
4 1/2	10 1/2	1 1/2	3 1/2	3 1/2	4 1/2
55.8	58.5	57.9	58.4	60.1	58.7
56.7	57.9	58.5	58.5	60.2	58.8
1175	1603	861	899	930	1073
947	982	745	700	752	795
228	621	116	199	178	278
2243	2473	1417	1238	1252	1595
1712	1539	1076	967	924	1127
531	934	341	271	328	468
3418	4076	2978	2137	2182	2668
2659	2521	1821	1667	1676	1921
759	1555	457	470	506	747
5 yrs. 1851-'55	10 yrs. 1856-'65	10 yrs. 1866-'75	10 yrs. 1876-'85	10 yrs. 1886-'95	40 yrs. 1856-'95

AVERAGES—PRODUCE AFTER FALLOW RECKONED AT THE YIELD PER ACRE OF THE WHOLE AREA, HALF IN CROP AND HALF FALLOW.					
5 yrs. 1851-'55	10 yrs. 1856-'65	10 yrs. 1866-'75	10 yrs. 1876-'85	10 yrs. 1886-'95	40 yrs. 1856-'95
9 1/2	13	6 1/2	7 1/2	7 1/2	8 1/2
14 1/2	15 1/2	11 1/2	11 1/2	12 1/2	12 1/2
5 1/2	2 1/2	5 1/2	3 1/2	4 1/2	4 1/2
587	802	430	449	465	536
947	982	745	700	752	795
360	180	315	251	287	259
1122	1236	709	619	626	798
1712	1539	1076	967	924	1127
590	303	367	348	298	329
1709	2038	1139	1068	1091	1334
2659	2521	1821	1667	1676	1921
950	488	682	599	585	587
5 yrs. 1851-'55	10 yrs. 1856-'65	10 yrs. 1866-'75	10 yrs. 1876-'85	10 yrs. 1886-'95	40 yrs. 1856-'95

AVERAGES—PRODUCE AFTER FALLOW RECKONED AT THE YIELD PER ACRE OF THE HALF IN CROP EACH YEAR.

AVERAGES—PRODUCE AFTER FALLOW RECKONED AT THE YIELD PER ACRE OF THE WHOLE AREA, HALF IN CROP AND HALF FALLOW.