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Wheat Alternated With Fallow, and Wheat Grown Continuously

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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 Broadbalk-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 acre (Area under experiment, 1 acre.)

1852, on the half acre of wheat after fallow; and in the second column the produce per acre obtained in the adjoining field (Broadbalk), where wheat is grown year after year on the same land. Lastly, in the third column of each of the vertical divisions is given the amount of produce after fallow, + or - that grown year after year on the same land.

The results for the individual years show that during the earlier years of the experiments on alternate wheat and fallow, when the accumulations due to previous treatment were less exhausted, the produce after fallow was more in excess of that grown in the adjoining field year after year on the same land than afterwards. Referring to the two sets of averages at the foot of the Table, it is seen that if (as in the upper of the two divisions), the produce after fallow is reckoned at the yield per acre of the half in crop each year, it gives on the average several bushels more grain, and also more straw, per acre per annum, than where the crop is grown continuously. On the other hand, if the produce after fallow is reckoned (as in the bottom division) at the yield per acre of the whole area, half in crop and half fallow, it gives several bushels less grain, and also less straw, per acre per annum, than where the crop is grown year after year on the same land.

The conclusion to be drawn is, that although there is an increase of produce after fallow compared with that of wheat grown continuously, it is obtained at the sacrifice of a crop every other year; and that a given area of land yields more when the crop is grown year after year than when alternated with fallow. The explanation doubtless is, that much of the nitrogen brought into an available condition under the influence of the fallow, is lost by drainage during the long period that the land is without a crop.

Year	Dressed Grain.		Weight per Bushel.		Total Grain.		Total Straw.		Total Produce (Grain and Straw).	
	Wheat after Fallow each year.	Wheat after Fallow + or - after Wheat.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow each year.	Wheat after Fallow + or - after Wheat.	Wheat after Fallow each year.	Wheat after Fallow + or - after Wheat.	Wheat after Fallow each year.	Wheat after Fallow + or - after Wheat.
1851	Bushels. Fallow 37	Bushels. - 157	lbs. Fallow 61.1	lbs. 1083	lbs. Fallow 4934	lbs. - 1083	lbs. 1627	lbs. Fallow 7022	lbs. 2710	lbs. - 2710
1852	Fallow 42	+ 23 1/2	Fallow 53.0	860	4834	+ 1228	1597	3337	2457	+ 4565
1853	Fallow 42	+ 21	Fallow 60.5	359	Fallow 4545	- 359	1413	1772	1772	- 1772
1854	Fallow 17 1/2	+ 0 1/2	Fallow 59.2	1072	1734	+ 1350	2137	2408	3496	+ 3758
1855	Fallow 17 1/2	+ 0 1/2	Fallow 59.2	1072	1734	+ 8	1787	53	2859	- 45
PERIOD OF EXACT COMPARISON.										
1856	21 1/2	+ 7 1/2	60.0	1388	2113	+ 496	1558	555	3501	+ 1051
1857	38	+ 18	58.4	2299	3075	+ 1063	1577	1498	5374	+ 2361
1858	25 1/2	+ 7 1/2	60.4	1630	2468	+ 489	1670	798	4098	+ 1287
1859	34	+ 15 1/2	55.0	1976	3686	+ 925	2175	1511	5662	+ 2436
1860	121	+ 0 1/2	52.5	697	1226	- 41	1459	233	1923	- 274
1861	17 1/2	+ 6 1/2	57.4	1145	2072	+ 409	1254	818	3217	+ 1227
1862	22 1/2	+ 6 1/2	57.8	1361	2294	+ 365	1713	581	3655	+ 946
1863	32 1/2	+ 15 1/2	61.4	2090	2900	+ 963	1600	1300	4990	+ 2263
1864	31 1/2	+ 14 1/2	61.7	2005	2746	+ 927	1350	1396	4751	+ 2323
1865	24 1/2	+ 11	60.6	1440	2150	+ 612	1033	1117	3590	+ 1729

