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



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Experiments on Wheat; Broadbalk Field

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EXPERIMENTS ON THE GROWTH OF WHEAT YEAR AFTER YEAR ON THE SAME LAND; WITHOUT MANURE, AND WITH DIFFERENT KINDS OF MANURE. BROADBALK FIELD.

Previous Cropping—1839, Turnips, with Farmyard Manure; 1840, Barley; 1841, Peas; 1842, Wheat; 1843, Oats; the last four Crops Unmanured. First Experimental Wheat Crop in 1844. Wheat every year since; and, with some exceptions, nearly the same description of Manure on the same Plots each year—especially during the last 14 years.

Plots.	Manures, per acre; twenty-third season—1866.	PRODUCE PER ACRE.			
		Average per Annum, over 14 Years, 1852-1865.		Twenty-second Season, 1865.	
		Quantity.	Weight per Bushel.	Quantity.	Weight per Bushel.
0	1 acre = (about) 0.40 Hectare or 1.59 Prussian Morgen.	Bushels.	lbs.	Bushels.	lbs.
1	1 bushel = (about) 0.36 Hectolitre or 0.66 Prussian Scheffel.	18	58	15 1/2	59
2	1 lb. (pound avoird.) = (about) 0.45 Kilogramme or 0.91 Zollverein Pfund.	16	57 1/2	12 1/2	59
3	1 cwt. (hundredweight) = (about) 51.0 Kilogrammes or 1.02 Centner.	35 1/2	59 1/2	37 1/2	61 1/2
4	1 bushel per acre = (about) 0.9 Hectolitre per Hectare or 0.42 Pr. Scheffel per Pr. Morgen.	15 1/2	57 1/2	13 1/2	60 1/2
5 (a and b)	1 lb. per acre = (about) 1.12 Kilogramme per Hectare or 0.57 Zollv. Pfd. per Pr. Morgen.	16 1/2	57 1/2	14 1/2	60 1/2
6 (a and b)	1 cwt. per acre = (about) 125.5 Kilogrammes per Hectare or 0.64 Centner per Pr. Morgen.	18	58 1/2	14 1/2	61
7 (a and b)	Manures, per acre; twenty-third season—1866.	28 1/2	59	25	61
8 (a and b)	Superphosphate of Lime (three times as much as on No. 5 and succeeding Plots)	37 1/2	59	40 1/2	61 1/2
9 { a	Mixed Alkalies (twice as much as on No. 5 and succeeding Plots)	39 1/2	58 1/2	43 1/2	61 1/2
10 { b	Farm-yard dung (14 tons every year) ; and Superphosphate of Lime (2)	36 1/2	57 1/2	44	61
11 (a and b)	Unmanured continuously ; and 200 lbs. Ammonia-salts (3)	26 1/2	56 1/2	29 1/2	59 1/2
12 (a and b)	Unmanured continuously ; and 400 lbs. ditto	23 1/2	56 1/2	25 1/2	59 1/2
13 (a and b)	Unmanured continuously ; and 600 lbs. ditto	27 1/2	57 1/2	30 1/2	59 1/2
14 (a and b)	Unmanured continuously ; and 550 lbs. Nitrate of Soda	30	56 1/2	27 1/2	57 1/2
15 { a	Unmanured continuously ; and 400 lbs. ditto	35 1/2	58 1/2	33 1/2	60
16 { b	Unmanured continuously ; and 400 lbs. ditto	35 1/2	58 1/2	36 1/2	60 1/2
17 (a and b)	Unmanured continuously ; and 400 lbs. ditto	33 1/2	59	35 1/2	60 1/2
18 (a and b)	Unmanured continuously ; and 300 lbs. ditto	35 1/2	59 1/2	36 1/2	61 1/2
19	Unmanured continuously ; none	39	58 1/2	32 1/2	61 1/2
20	Unmanured continuously ; "Superphosphate of Lime"	32 1/2 (7)	59 (7)	17 (7)	60 1/2 (7)
21	Unmanured continuously ; "Superphosphate of Lime"	18 1/2 (8)	58 1/2 (8)	17 (8)	60 1/2 (8)
22	Unmanured continuously ; "Superphosphate of Lime"	32 1/2	58 1/2	31 1/2 (9)	60 1/2 (9)
	Unmanured continuously ; 300 lbs. "Ammonia-salts"; and 500 lbs. Rape-cake	15 1/2	57 1/2	13 1/2	60 1/2
	Unmanured continuously ; "Superphosphate of Lime"	22	58 1/2	18 1/2	58
	Unmanured continuously ; "Superphosphate of Lime"	21 1/2	58 1/2	19 1/2	58 1/2

(1) Since 1858, 200 lbs. Sulphate of Potash, 100 lbs. Sulphate of Soda, and 100 lbs. Sulphate of Magnesia; for Crop of 1857-8, and previously, 300 lbs., 200 lbs., and 100 lbs., respectively. (2) 200 lbs. Bone-ash, 150 lbs. Sulphuric acid (sp. gr. 1.7). (3) Equal parts Sulphate and Muriate of Ammonia of Commerce. (4) For 1858, and previously 1 1/2 times as much. (5) With Hydrochloric instead of Sulphuric Acid. (6) The Manures of 17 and 18 alternate. (7) Average of 14 years' Ammonia-salts alternated with Mineral Manures. (8) Average of 14 years' Mineral Manures alternated with Ammonia-salts. (9) Plots 17 had the Mineral Manures for the Crop of 1865. Plots 18 had the Ammonia-salts for the Crop of 1865. The Plots marked "(a and b)" are divided into duplicate portions, "a" and "b," respectively, which are manured alike; excepting that, for the crop of 1864, and since, the "a" portions of plots 5, 6, 7, 8, 9, 16, and 17 (or 18), have received a mixture of soluble Silicates in addition to the other Manures, but, hitherto, without any material effect.