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Memoranda of the Field Experiments at Rothamsted: May 1881



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Experiments on Wheat; Broadbalk Field

Rothamsted Research

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BROADBALK FIELD.

EXPERIMENTS ON THE GROWTH OF WHEAT YEAR AFTER YEAR ON THE SAME LAND, WITHOUT MANURE, AND WITH DIFFERENT KINDS OF MANURE. 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 30 years (1852 and since). The Crop of the present year, 1881, is, therefore, the 38th Wheat Crop in succession. From the commencement of the experiments in 1843-4 up to 1876-7 inclusive, the mineral manures, the ammonia-salts, and rape-cake, &c., if any, were sown in the autumn, before the seed; in 1845, when, owing to the wet autumn and winter, all the manures were spring-sown; and for the crops of 1873, 4, 5, 6, and 7, the ammonia-salts were sown in the autumn, and the ammonia-salts, and rape-cake, &c., if any, were sown in the spring. Nitrate of soda has, however, always been sown in the spring. But, in consequence of the ascertained great loss of the nitrogen of the manures by drainage, especially in wet winters, it has been decided to apply only the mineral manures (and Farmyard-manure) in the autumn, and the ammonia-salts, as well as the nitrate, in the spring; excepting on Plot 19, where, for comparison, the ammonia-salts are sown in the autumn. This plan was adopted for the first time for the crop of 1878.

(Area under experiment, about 13 acres.)

PLOTS.	PRODUCE PER ACRE.											Plots.											
	Average per Annum.				Total Straw.			Thirty-Seventh Season, 1880.			Total Straw.												
	Dressed Corn.		Weight per Bushel.		M.Years, 1840-79.	M.Years, 1852-80.	M.Years, 1862-80.	M.Years, 1862-79.	Quantity.	Weight per Bushel.			Total Straw.										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	18	16	15	16	28	37	36	36	23	27	30	26	18	19	18	14	13	13	32	24	15	21	22
	10 1/2	10 1/4	11	11 1/2	18 1/2	24	35	33	21	24	26	19 1/2	13 1/2	13 1/4	12 1/2	10 1/4	10 1/2	11 1/4	11 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	58 1/2	58 1/2	59	57 1/2	58 1/2	59	58 1/2	57 1/2	57 1/2	58 1/2	57 1/2	58 1/2	58 1/2	58 1/2	58 1/2	58 1/2	58 1/2	58 1/2	58 1/2	58 1/2	58 1/2	58 1/2	58 1/2
	15 1/2	15	15 1/2	14 1/2	16 1/2	22 1/2	32 1/2	30 1/2	21 1/2	24 1/2	26 1/2	19 1/2	13 1/2	13 1/4	12 1/2	10 1/4	10 1/2	11 1/4	11 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	11 1/2	9 1/2	9 1/2	9 1/2	10 1/2	18 1/2	29 1/2	27 1/2	17 1/2	21 1/2	23 1/2	16 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	16 1/2	15 1/2	15 1/2	14 1/2	16 1/2	26 1/2	37 1/2	35 1/2	25 1/2	29 1/2	31 1/2	20 1/2	13 1/2	13 1/4	12 1/2	10 1/4	10 1/2	11 1/4	11 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2	11 1/2
	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2
	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2

(*) The Manures of Plots 17 and 18 are, year by year, transposed.
 (†) Made with Muratic instead of Sulphuric Acid.
 (‡) Averages of Mineral Manures, alternated with Ammonia-salts.
 (§) Averages of Ammonia-salts, alternated with Mineral Manures.
 (||) Averages of Nitrate of Soda, alternated with Ammonia-salts.
 (¶) Plots 18 and 19 were sown in the autumn in 1880.
 (**) Averages of 14 years, 13 years, and 27 years only; as, in 1868, owing to a mistake in carting, the produce could not be ascertained.
 The Plots marked "(a and b)" are divided into duplicate portions, "a" and "b", respectively, which are manured alike; excepting that, for the crops of 1864-5-6 and 7, the "a" portions of plots 5, 6, 7, 8, 9, 16, and 17 (or 18), received a mixture of soluble Silicates in addition to the other Manures, but, hitherto, without any material effect; and for the crops of 1868 to 1879 inclusive, cut straw (that produced in the previous season) was applied (instead of Silicates) on the "a" portions of plots 5, 6, 7, 8, 9, 11, 12, 13, 14, and 17 (or 18); also, for the crop of 1874, and each succeeding crop to 1879 inclusive, the straw of the previous season was cut up and applied to the "a" portion of Plot 19. For the crop of 1880, and since, the return of the straw has been discontinued.