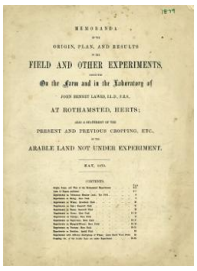
Memoranda of the Field Experiments at Rothamsted: May 1879



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Rothamsted Research

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HOOS FIELD.

Experiments on the Growth of BARLEY year after year on the same Land, without Manure, and with different kinds of Manure.

Previous Cropping—1847, Swedish Turnips, with Dung and Superphosphate of Lime, the Roots carted off; 1848, Barley; 1849, Clover; 1850, Wheat; 1851, Barley manured with Ammonia-salts. First Experimental Barley Crop in 1852. Barley every year since; and, unless stated to the contrary in the Table, or in the foot-notes, the same Manure has been applied year after year to the same Plot.

(Area under experiment, about 4¼ acres.)

1 acre	= (about)	0·40	Hectare	or 1·59	Prussian Morgen.
1 bushel	= (about)	0·36	Hectolitre	or 0·66	Prussian Scheffel.
1 lb. (pound avoir.)	= (about)	0·45	Kilogramme	or 0·91	Zollverein Pfund.
1 cwt. (hundredweight)	= (about)	51·0	Kilogrammes	or 1·02	Centner.
1 bushel per acre	= (about)	0·9	Hectolitre per Hectare	or 0·42	Pr. Scheffel per Pr. Morgen.
1 lb. per acre	= (about)	1·12	Kilogramme per Hectare	or 0·57	Zollv. Pfd. per Pr. Morgen.
1 cwt. per acre	= (about)	125·5	Kilogrammes per Hectare	or 0·64	Centner per Pr. Morgen.

Plots.	Manures, per acre, per annum.	Produce per Acre. Average per Annum. Dressed Corn. Quantity. 13 Years, 1852–64.	Quantity. 13 Years, 1865–77.	Quantity. 26 Years, 1852–77.	Weight per Bushel. 13 Years, 1852–64.	Weight per Bushel. 13 Years, 1865–77.	Weight per Bushel. 26 Years, 1852–77.	Total Straw. 13 Years, 1852–64.	Total Straw. 13 Years, 1865–77.	Total Straw. 26 Years, 1852–77.	Twenty-seventh Season, 1878. Dressed Corn. Quantity.	Twenty-seventh Season, 1878. Dressed Corn. Weight per Bushel.	Twenty-seventh Season, 1878. Total Straw.	Plots.
		Bushels.	Bushels.	Bushels.	lbs.	lbs.	lbs.	Cwts.	Cwts.	Cwts.	Bushels.	lbs.	Cwts.	
1 O.	Unmanured continuously	22	15⅛	18⅝	52	53	52½	12⅞	8½	10¾	10	48⅜	6	1 O.
2 O.	3½ cwts. Superphosphate of Lime [1]	28	19⅞	24	52½	54	53¼	14¾	9½	12⅛	12⅛	49	9	2 O.
3 O.	200 lbs. [2] Sulphate Potass, 100 lbs. [3] Sulphate Soda, 100 lbs. Sulphate Magnesia	24¾	16¾	20¾	52⅜	53¾	53	13½	8¾	11⅛	7¾	49¼	5½	3 O.
4 O.	200 lbs. [2] Sulphate Potass, 100 lbs. [3] Sulphate Soda, 100 lbs. Sulphate Magnesia, 3½ cwts. Superphosphate	30½	20¼	25⅜	52⅞	54	53½	15⅞	10¼	13⅛	11⅜	48½	7¾	4 O.
1 A.	200 lbs. Ammonia-salts [4]	34½	28⅛	31⅜	51½	53	52¼	20	15¼	17⅝	15	48	10¼	1 A.
2 A.	200 lbs. Ammonia-salts, and 3½ cwts. Superphosphate	48⅛	43¼	45¾	52⅝	54⅜	53½	29	23⅛	26	31⅜	51	19⅜	2 A.
3 A.	200 lbs. Ammonia-salts, 200 lbs. [2] Sulph. Potass, 100 lbs. [3] Sulph. Soda, 100 lbs. Sulph. Magnesia	36¾	31¾	34¼	52	54	53	22⅛	17⅜	19¾	20⅛	50	12⅛	3 A.
4 A.	200 lbs. Ammonia-salts, 200 lbs. [2] Sulph. Potass, 100 lbs. [3] Sulph. Soda, 100 lbs. Sulph. Mag., 3½ cwts. Superphos.	47¾	42⅞	45⅜	53	55½	54¼	29¾	25¼	27½	33⅝	52	19¾	4 A.
(5) 1 AA.	275 lbs. Nitrate Soda	40	30¾	35⅜	51¼	53	52⅛	23⅞	17¾	20¾	15⅞	47½	10⅜	1 AA.
(5) 2 AA.	275 lbs. Nitrate Soda, and 3½ cwts. Superphosphate	50½	45⅛	47⅞	52¼	54⅝	53½	32	25¾	28⅞	33½	51⅞	19½	2 AA.
(5) 3 AA.	275 lbs. Nitrate Soda, 200 lbs. [2] Sulph. Potass, 100 lbs. [3] Sulph. Soda, 100 lbs. Sulph. Magnesia	40	31⅝	35⅞	51½	53¾	52⅝	26	19⅜	22⅝	20⅜	50⅜	12	3. AA.
(5) 4 AA.	275 lbs. Nitrate Soda, 200 lbs. [2] Sulph. Potass, 100 lbs. [3] Sulph. Soda, 100 lbs. Sulph. Mag., 3½ cwts. Superphos.	51	45	48	52¼	55½	53⅞	34¾	26½	30⅝	31⅝	52⅞	19⅝	4 AA.
(6) 1 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda [6]	..	36¼	..	..	54	..	..	20½	..	25	50⅛	14¼	1 AAS.
(6) 2 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda, and 3½ cwts. Superphosphate [1]	..	46¼	..	..	55⅛	..	..	27⅛	..	30⅛	52⅝	21⅛	2 AAS.
(6) 3 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda, 200 lbs. [2] Sulph. Potass, 100 lbs. [3] Sulph. Soda, 100 lbs. Sulph. Mag.	..	40⅝	..	..	54½	..	..	23¾	..	27⅛	51⅞	14¾	3 AAS.
(6) 4 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda, 200 lbs. [2] Sulph. Potass, 100 lbs. [3] Sulph. Soda, 100 lbs. Sulph. Mag. and 3½ cwts. Superphosphate	..	47¾	..	..	55⅜	..	..	29⅜	..	40⅛	54	26⅝	4 AAS.
(7) 1 C.	1000 lbs. Rape-cake	47	41¼	44⅛	52¾	55⅛	54	28¾	22¼	25½	27¾	52	19⅝	1 C.
(7) 2 C.	1000 lbs. Rape-cake, and 3½ cwts. Superphosphate	48½	42¾	45⅝	52¾	55⅜	54⅛	30⅝	23⅛	26⅞	32⅛	53⅛	19¾	2 C.
(7) 3 C.	1000 lbs. Rape-cake, 200 lbs. [2] Sulph. Potass, 100 lbs. [3] Sulph. Soda, 100 lbs. Sulph. Magnesia	44½	40	42¼	52⅝	55¼	54	28¾	22⅜	25½	29¼	52⅜	17⅛	3 C.
(7) 4 C.	1000 lbs. Rape-cake, 200 lbs. [2] Sulph. Potass, 100 lbs. [3] Sulph. Soda, 100 lbs. Sulph. Mag., 3½ cwts. Superphos.	48¼	44¼	46¼	52½	55½	54	31⅜	24⅜	27⅞	32⅝	53½	20½	4 C.
(8) 1 N.	275 lbs. Nitrate of Soda	38⅞	34¼	36½ (11)	52	53½	52¾ (11)	24⅛	20	22 (11)	17⅛	48⅝	11⅝	1 N.
(8) 2 N.	275 lbs. [9] Nitrate of Soda	43⅜	38	40⅝ (11)	51¾	54¼	53 (11)	27¾	22	24¾ (11)	19⅛	50⅛	12½	2 N.
5 O.	200 lbs. [2] Sulphate of Potass, 3½ cwts. Superphosphate [10]	24⅝	17½	20⅞ (11)	52½	54⅜	53½ (11)	13½	8⅞	11⅛ (11)	6⅝	48¼	3⅞	5 O.
5 A.	200 lbs. [2] Sulphate of Potass, 3½ cwts. Superphosphate, and 200 lbs. Ammonia-salts	45½	41⅜	43⅜ (11)	52¾	55½	54⅛ (11)	29⅜	24⅝	26⅞ (11)	27¾	52	16⅞	5 A.
M.	100 lbs. Sulphate of Soda, 100 lbs. Sulphate of Magnesia, and 3½ cwts. Superphosphate	23⅛	17¾	19⅝ (12)	53	53⅝	53 (12)	13⅛	10⅛	11¼ (12)	12¾	51⅝	8⅜	M.
6 {1	Unmanured continuously	24¾	15⅝	20¼	52	53⅛	52⅝	13¾	8⅞	11¼	9¾	48⅜	5⅛	1} 6
6 {2	Ashes (burnt soil and turf)	24	17	20½	52⅛	53½	52⅞	13⅛	9	11	11¼	49⅜	6¼	2} 6
7 {1	Farmyard Manure 14 tons, 20 yrs., 1852–71, av. prod. 48¼ bush.; unmanured since, av. prod., 7 yrs., 1872–8, 36¼ bush.	48¼	38⅝	46 (13)	54⅜	55	54½ (13)	28¼	21	26⅝ (13)	21⅞	52⅜	16⅛	1} 7
7 {2	Farmyard Manure 14 tons, every year; av. produce, 20 years, 1852–71, 48¼ bush.; 7 years, 1872–8, 49½ bush.	47¾	49½	48⅝	53½	55⅜	54½	28½	28½	28	46⅜	52¾	32⅜	2} 7

(1) The "Superphosphate of Lime" is, in all cases, made from 200 lbs. Bone-ash, 150 lbs. Sulphuric acid sp. gr. 1·7 (and water).

(2) 300 lbs. per annum for the first six years, 1852–7.

(3) 200 lbs. per annum for the first six years, 1852–7.

(4) The "Ammonia-salts"—in all cases equal parts Sulphate and Muriate of Ammonia of Commerce.

(5) First 6 years, 1852–7, instead of Nitrate of Soda, 400 lbs. Ammonia-salts per annum; next 10 years, 1858–67, 200 lbs. Ammonia-salts per annum; 1868, and since, 275 lbs. Nitrate of Soda per annum. 275 lbs. Nitrate of Soda is reckoned to contain the same amount of Nitrogen as 200 lbs. "Ammonia-salts."

(6) The application of Silicates did not commence until 1864; in 1864-5-6 and 7, 200 lbs. Silicate of Soda and 200 lbs. Silicate of Lime were applied per acre, but in 1868, and since, 400 lbs. Silicate of Soda, and no Silicate of Lime. These plots ("AAS") comprise, respectively, one half of the original "AA" plots, and, excepting the addition of the Silicates, have been, and are, in other respects, manured in the same way as the "AA" plots.

(7) 2000 lbs. Rape-cake per annum for the first six years, and 1000 lbs. only, each year since.

(8) 300 lbs. Sulphate of Potass, and 3½ cwts. Superphosphate of Lime, without Nitrate of Soda, the first year (1852); Nitrate alone each year since.

(9) 550 lbs. Nitrate of Soda for 1853-4-5-6, and 7; and 275 lbs. only, each year since.

(10) Ammonia-salts also the first year, but not since.

(11) Averages of 12 years, 13 years, and 25 years.

(12) Averages of 7 years, 13 years, and 20 years.

(13) Averages of 20 years (with dung), 6 years (unmanured), and 26 years.