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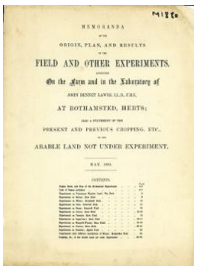
Memoranda of the Field Experiments at Rothamsted: May 1880



Full Table of Content

Experiments on Barley; Hoos Field

Rothamsted Research

Rothamsted Research (1881) *Experiments on Barley; Hoos Field ;* Memoranda Of The Field Experiments At Rothamsted: May 1880, pp 9 - 9 **- DOI: https://doi.org/10.23637/ERADOC-1-244**

https://doi.org/10.23637/ERADOC-1-244

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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.	13 Years, 1865-77.	26 Years, 1852-77.	Weight per Bushel. 13 Years, 1852-64.	13 Years, 1865-77.	26 Years, 1852-77.	Total Straw. 13 Years, 1852-64.	13 Years, 1865-77.	26 Years, 1852-77.	Twenty-eighth Season, 1879. Dressed Corn. Quantity.	Weight per Bushel.	Total Straw.	Plots.
		Bushels.	Bushels.	Bushels.	lbs.	lbs.	lbs.	Cwts.	Cwts.	Cwts.	Bushels.	lbs.	Cwts.	
1 O.	Unmanured continuously	22	15½	18⅜	52	53	52½	12⅝	8½	10¾	6¼	48¾	4¾	1 O.
2 O.	3½ cwts. Superphosphate of Lime (1)	28	19⅞	24	52⅛	54	53¼	14¾	9⅝	12⅛	7⅜	51⅝	5⅜	2 O.
3 O.	200 lbs. (2) Sulphate Potass, 100 lbs. (3) Sulphate Soda, 100 lbs. Sulphate Magnesia	24¾	16¾	20¾	52⅜	53¾	53	13⅓	8¾	11⅛	6½	46	3⅞	3 O.
4 O.	200 lbs. (2) Sulphate Potass, 100 lbs. (3) Sulphate Soda, 100 lbs. Sulphate Magnesia, 3½ cwts. Superphosphate	30½	20¼	25⅜	52⅝	54	53½	15⅞	10¼	13⅛	7¼	50⅜	4⅛	4 O.
1 A.	200 lbs. Ammonia-salts (4)	34½	28⅛	31⅜	51⅓	53	52¼	20	15½	17⅝	15⅜	50⅜	11¼	1 A.
2 A.	200 lbs. Ammonia-salts, and 3½ cwts. Superphosphate	48½	43¼	45¾	52⅝	54⅜	53½	29	23⅛	26	27⅜	50¼	18⅛	2 A.
3 A.	200 lbs. Ammonia-salts, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia	36⅜	31½	34¼	52	54	53	22⅛	17⅜	19¾	16⅜	50¼	11⅜	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	27¼	50¼	20⅞	4 A.
(5) 1 AA.	275 lbs. Nitrate Soda	40	30¾	35⅜	51¼	53	52⅛	23⅞	17⅜	20⅜	13⅜	49	9¼	1 AA.
(5) 2 AA.	275 lbs. Nitrate Soda, and 3½ cwts. Superphosphate	50½	45⅛	47⅞	52½	54⅝	53½	32	25¾	28⅞	26⅜	51½	22⅞	2 AA.
(5) 3 AA.	275 lbs. Nitrate Soda, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia	40	31⅜	35⅞	51½	53⅜	52⅝	26	19⅜	22⅛	16⅜	51⅛	11⅜	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	30⅜	25½	49¾	21⅜	4 AA.
(5) 1 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda (6)	..	36½	..	..	54	..	..	20⅓	..	19⅜	49⅛	16¼	1 AAS.
(5) 2 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda, and 3½ cwts Superphosphate (1)	..	40⅜	..	..	55⅛	..	..	27⅛	..	27⅜	50⅜	23⅓	2 AAS.
(5) 3 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Mag.	..	40⅜	..	..	54½	..	..	23¾	..	23¼	51¾	13⅜	3 AAS.
(5) 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	..	29¾	49¾	23⅝	4 AAS.
(7) 1 C.	1000 lbs. Rape-cake	47	41½	44⅛	52⅜	55⅛	54	28⅜	22¼	25½	27⅞	50	21⅛	1 C.
(7) 2 C.	1000 lbs. Rape-cake, and 3½ cwts. Superphosphate	48½	42¾	45⅝	52⅜	55⅜	54⅛	30⅝	23⅛	26⅞	28⅝	50¾	21⅝	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	52⅜	55¼	54	28⅜	22⅜	25½	26⅜	49⅝	21¼	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	44½	46⅞	52½	55½	54	31⅜	24⅜	27⅞	31⅛	49⅝	23⅛	4 C.
(8) 1 N.	275 lbs. Nitrate of Soda	38⅞	34¼	36½ (11)	52	53½	52⅜ (11)	24½	20	22 (11)	17	48⅜	13⅛	1 N.
(8) 2 N.	275 lbs. (9) Nitrate of Soda	43⅜	38	40⅝ (11)	51⅜	54¼	53 (11)	27¾	22	24¾ (11)	21½	48⅜	15⅞	2 N.
5 O.	200 lbs. (2) Sulphate of Potass, 3½ cwts. Superphosphate (10)	24⅝	17½	20⅞ (11)	52⅛	54⅜	53⅓ (11)	13½	8⅞	11⅛ (11)	7⅜	48	7⅜	5 O.
5 A.	200 lbs. (2) Sulphate of Potass, 3½ cwts. Superphosphate, and 200 lbs. (18) Ammonia-salts	45½	41⅜	43⅜ (11)	52⅜	55⅜	54⅛ (11)	29⅜	24⅛	26⅝ (11)	24⅜	48¼	23¼	5 A.
M.	100 lbs. Sulphate of Soda, 100 lbs. Sulphate of Magnesia, and 3½ cwts. Superphosphate	23⅛	17⅜	19⅝ (12)	53	53⅛	53 (12)	13⅜	10⅛	11¼ (12)	(14)	(14)	(14)	M.
6 1	Unmanured continuously	24¾	15⅝	20¼	52	53⅛	52⅝	13¾	8⅞	11¼	8	48	5	1 6
6 2	Ashes (burnt soil and turf)	24	17	20½	52⅛	53½	52⅜	13⅛	9	11	6½	48½	4¼	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)	51⅜	55	54½ (13)	28¼	21	26⅝ (13)	16⅝	47¾	11⅜	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	36⅜	50½	32½	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.
(14) Produce not weighed, owing to the foulness from the wet season.
(15) By mistake 400 lbs. in 1880.