Memoranda of the Field Experiments at Rothamsted, May 1873

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Experiments on Barley; Hoos Field

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 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, over 20 Years, 1852–1871. Dressed Corn. Quantity.	Weight per Bushel.	Total Straw.	Twenty-first Season, 1872. Dressed Corn. Quantity.	Weight per Bushel.	Total Straw.	Plots.
		Bushels.	lbs.	cwts.	Bushels.	lbs.	cwts.	
1 O.	Unmanured continuously	20	52⅜	11⅜.	10¼	53¼	6	1 O.
2 O.	3½ cwts. Superphosphate of Lime (1)	25½	53¾	13⅜	15⅝	54¼	6⅞	2 O.
3 O.	200 lbs. (2) Sulphate Potass, 100 lbs. (3) Sulphate Soda, 100 lbs. Sulphate Magnesia	22½	53	12¼	10½	53½	6½	3 O.
4 O.	200 lbs. (2) Sulphate Potass, 100 lbs. (3) Sulphate Soda, 100 lbs. Sulphate Magnesia, 3½ cwts. Superphosphate	27½	53⅜	14⅜	14¼	53⅜	7⅝	4 O.
1 A.	200 lbs. Ammonia-salts (4)	32½	52½	18½	26¼	52½	15¼	1 A.
2 A.	200 lbs. Ammonia-salts, and 3½ cwts. Superphosphate	47	53½	27⅝	39⅜	53½	22⅞	2 A.
3 A.	200 lbs. Ammonia-salts, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia	35	52¾	20¼	30⅜	53½	17⅜	3 A.
4 A.	200 lbs. Ammonia-salts, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate	46¼	54	28½	36⅞	54¼	24¼	4 A.
(5) 1 AA.	275 lbs. Nitrate Soda	37	52	22⅛	26¾	52⅜	16⅞	1 AA.
(5) 2 AA.	275 lbs. Nitrate Soda, and 3½ cwts. Superphosphate	49¼	53⅜	30½	38⅝	53½	23¾	2 AA.
(5) 3 AA.	275 lbs. Nitrate Soda, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia	37¾	52¼	24⅜	29½	54½	19¾	3 AA.
(5) 4 AA.	275 lbs. Nitrate Soda, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate	49¾	53⅜	32⅜	32	53½	22	4 AA.
(5) 1 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda (6)	37	54½	21⅞	33	53⅛	20½	1 AAS.
(5) 2 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda, and 3½ cwts Superphosphate (1)	47¼	55¾	29	38½	53¼	25⅜	2 AAS.
(5) 3 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, and 100 lbs. Sulph. Magnesia	43⅜	55	25⅞	35⅞	54⅜	22⅜	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. Magnesia, and 3½ cwts. Superphosphate	50	55⅞	31½	36⅞	52¼	27⅝	4 AAS.
(7) 1 C.	1000 lbs. Rape-cake	45¼	53⅜	26⅞	30⅛	52½	17⅛	1 C.
(7) 2 C.	1000 lbs. Rape-cake, and 3½ cwts. Superphosphate	46⅜	53⅞	28⅜	33¼	52⅞	19⅞	2 C.
(7) 3 C.	1000 lbs. Rape-cake, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia	43⅜	53¾	27⅛	27⅜	53	17	3 C.
(7) 4 C.	1000 lbs. Rape-cake, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia, 3½ cwts. Superphosphate	47⅜	53⅜	29½	33⅛	53⅜	20½	4 C.
(8) 1 N.	275 lbs. Nitrate of Soda	37⅜ (11)	52⅝ (11)	22⅞ (11)	33 5/8	52	22⅛	1 N.
(8) 2 N.	275 lbs. (9) Nitrate of Soda	41½ (11)	52⅝ (11)	26⅛ (11)	31⅞	53⅛	20⅛	2 N.
5 O.	200 lbs. (2) Sulphate of Potass, 3½ cwts. Superphosphate (10)	22¾ (11)	53½ (11)	12⅜ (11)	11	53⅞	6	5 O.
5 A.	200 lbs. (2) Sulphate of Potass, 3½ cwts. Superphosphate, and 200 lbs. Ammonia-salts	44½ (11)	53½ (11)	28 (11)	30⅞	53⅛	20¼	5 A.
M.	100 lbs. Sulphate of Soda, 100 lbs. Sulphate of Magnesia, and 3½ cwts. Superphosphate	21½ (12)	53¼ (12)	12⅜ (12)	9	53¼	6⅞	M.
6 1	Unmanured continuously	22	52½	12⅜	11	53¼	7	1
6 2	Ashes (burnt soil and turf)	22	52⅜	12⅛	12¾	54¼	6⅜	2 6
7 1	Farmyard Manure 14 tons, 20 years, 1852–1871; unmanured since	48¼	54⅜	28¼	38⅜	53⅝	23⅜	7
7 2	Farmyard Manure 14 tons, every year				38⅞	53	26	

(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; and, for the sake of comparison with the latter, the *average produce* is given for the whole period of 20 years, 1852–1871.

(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) Average of 19 years only.

(12) Average of 14 years only.