ROTHAMSTED RESEARCH

Yields of the Field Experiments 1878

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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 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. 12 Years, 1852–63.	12 Years, 1864–75.	24 Years, 1852–75.	Weight per Bushel. 12 Years, 1852–63.	12 Years, 1864–75.	24 Years, 1852–75.	Total Straw. 12 Years, 1852–63.	12 Years, 1864–75.	24 Years, 1852–75.	Twenty-sixth Season, 1877. 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	21½	15⅞	18⅞	51½	53¼	52⅜	12⅝	9½	11	17½	52¼	7⅜	1 O.
2 O.	3½ cwts. Superphosphate of Lime (1)	27⅜	20⅜	24¼	52¼	54⅜	53¼	14¾	10⅛	12⅜	23⅞	52⅛	9⅜	2 O.
3 O.	200 lbs. (2) Sulphate Potass, 100 lbs. (3) Sulphate Soda, 100 lbs. Sulphate Magnesia	24⅜	17⅝	21½	52	54¼	53⅛	13½	9½	11⅜	20⅛	52¾	9	3 O.
4 O.	200 lbs. (2) Sulphate Potass, 100 lbs. (3) Sulphate Soda, 100 lbs. Sulphate Magnesia, 3½ cwts. Superphosphate ..	30⅜	21½	25⅞	52½	54¼	53¾	15⅞	10⅞	13⅜	23⅜	53¼	9½	4 O.
1 A.	200 lbs. Ammonia-salts (4)	34½	29	31⅝	51¼	53½	52¼	19⅞	15⅞	17⅞	35¼	53⅜	15⅞	1 A.
2 A.	200 lbs. Ammonia-salts, and 3½ cwts. Superphosphate	47⅜	45⅜	46⅜	52¼	54⅜	53½	28⅜	24½	26⅜	44	54⅜	19½	2 A.
3 A.	200 lbs. Ammonia-salts, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia	36½	32⅝	34⅜	51½	54½	52⅞	22⅜	17⅝	20	41⅛	53½	19½	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.	47⅛	44	45½	52⅝	55⅜	54¼	29⅜	26½	27⅞	50⅛	56¼	24⅜	4 A.
(5) 1 AA.	275 lbs. Nitrate Soda	39⅞	32½	36	51	53⅜	52¼	23⅞	18⅜	21⅛	37½	53⅜	19	1 AA.
(5) 2 AA.	275 lbs. Nitrate Soda, and 3½ cwts. Superphosphate	50⅛	47⅛	48⅝	51⅜	55	53⅜	31⅞	27⅛	29⅜	46⅜	55⅜	22	2 AA.
(5) 3 AA.	275 lbs. Nitrate Soda, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia	39⅜	32⅞	36⅜	51¼	53⅞	52½	25⅞	20	23	38⅛	54½	18⅛	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.	50⅜	46⅜	48½	51¾	55½	53⅜	34⅝	28	31¼	49½	56⅜	23⅞	4 AA.
(5) 1 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda (6)	..	37⅜	..	..	54¼	..	..	21⅜	..	40⅜	55⅜	19	1 AAS.
(5) 2 AAS.	275 lbs. Nitrate Soda, 400 lbs. Silicate Soda, and 3½ cwts Superphosphate (1)	..	47½	..	..	55⅜	..	..	27⅜	..	50⅜	55⅜	22⅞	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.	..	42	..	..	54⅜	..	..	24⅞	..	46⅜	55⅛	21⅜	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	..	48⅝	..	..	55¼	..	..	30⅝	..	54⅞	56¼	30	4 AAS.
(7) 1 C.	1000 lbs. Rape-cake	47	42	44½	52¼	55⅜	53⅜	29	22⅜	25⅞	44⅝	55⅞	20½	1 C.
(7) 2 C.	1000 lbs. Rape-cake, and 3½ cwts. Superphosphate	48½	44½	46¼	52⅜	55½	54	30⅛	24¼	27⅜	42⅜	56⅜	20	2 C.
(7) 3 C.	1000 lbs. Rape-cake, 200 lbs. (2) Sulph. Potass, 100 lbs. (3) Sulph. Soda, 100 lbs. Sulph. Magnesia	44⅛	41¼	42⅜	52¾	55½	53⅞	28⅛	23⅜	26	43⅛	55	21⅜	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.	47⅞	45½	46¾	52⅜	55⅞	53¾	31	25¼	28⅜	47⅞	55	23¼	4 C.
(8) 1 N.	275 lbs. Nitrate of Soda	38¾	35⅜	37 (11)	51⅝	53⅝	52¾ (11)	24⅛	20⅞	22½ (11)	38⅛	53⅜	16⅜	1 N.
(8) 2 N.	275 lbs. (9) Nitrate of Soda	43⅛	39⅞	41	51¼	54⅜	52⅝ (11)	27¾	23	25⅜ (11)	41⅞	56	19⅝	2 N.
5 O.	200 lbs. (2) Sulphate of Potass, 3½ cwts. Superphosphate (10)	24⅜	18⅝	21⅜ (11)	52⅛	54⅞	53½ (11)	13⅜	9⅝	11½ (11)	19⅛	52⅜	8¼	5 O.
5 A.	200 lbs. (2) Sulphate of Potass, 3½ cwts. Superphosphate, and 200 lbs. Ammonia-salts	45⅛	42¼	43⅜ (11)	52¼	55½	54 (11)	29	25⅜	27⅝ (11)	47⅛	56¼	23¾	5 A.
M.	100 lbs. Sulphate of Soda, 100 lbs. Sulphate of Magnesia, and 3½ cwts. Superphosphate	22⅝	18½	19⅝ (12)	52⅜	54⅛	53½ (12)	13¼	10⅝	11½ (12)	19¼	52⅜	8⅝	M.
6 1	Unmanured continuously	24⅜	16⅝	20⅜	51⅜	53½	52½	13¾	9½	11⅜	17¼	52⅜	7½	1 6
6 2	Ashes (burnt soil and turf)	24	18	22	51⅞	53¾	52⅝	13	9¾	11⅜	19½	53⅜	8	2 6
7 1	Farmyard Manure 14 tons, 20 yrs., 1852–71, av. prod. 48¼ bush.; unmanured since, av. prod., 6 yrs., 1872–7, 38⅜ bush.	48½	41½	47½ (13)	54¼	54⅜	54⅜ (13)	28½	22⅞	27⅜ (13)	36	54⅜	15½	1 7
7 2	Farmyard Manure 14 tons, every year; av. produce, 20 years, 1852–71, 48¼ bush.; 6 years, 1872–7, 50 bush. ..	46⅜	50¾	48¾	53¼	55½	54⅜	27⅞	29⅜	28¾	51⅞	55½	23⅜	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 11 years, 12 years, and 23 years.
(12) Averages of 6 years, 12 years, and 18 years.
(13) Averages of 20 years (with dung), 4 years (unmanured), and 24 years.