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Report 1918-20 With the Supplement to the Guide to the Experimental Plots Containing the Yields per Acre Etc.



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Table of Results - the Classical Experiments

Rothamsted Research

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DATES OF SOWING AND HARVESTING (Harvest of 1918).

Field.	Crop.	Variety.	Sowing began.	Sowing finished.	Cutting began.	Carting began.	Carting finished.	Yield per Acre.
Great Knott Wood, east	Oats	Grey Winter	Oct. 24, '17	Oct. 27, '17	Aug. 1	Aug. 15	Aug. 17	37 bush.
" "	"	"	"	"	"	"	"	"
Little Knott Wood	Wheat	Red Standard (6 acres)	Nov. 8, '17	Nov. 8, '17	Aug. 10	Aug. 18	Aug. 18	40.5 "
Fosters, east	Barley	Red Marvel (7 acres)	Nov. 28, '17	Dec. 1, '17	"	Aug. 27	Aug. 27	33 "
" west	"	Plumage Archer	Apr. 4, '18	Apr. 10, '18	Sept. 7	Sept. 11	Sept. 12	28 "
West Barnfield	Potatoes	Arran Chief and King Edward	May 3, '18	May 11, '18	Nov. 7	"	"	15 tons* ware & 5 cwts. chats
Long Hoos, east	Wheat	Red Standard	Nov. 6, '17	Nov. 23, '17	Aug. 17	Aug. 24	Aug. 30	40.5 bush.
" west	"	Red	May 8, '17	May 8, '17	June 20	June 27	June 27	1.5 tons†
Great Harpenden	Clover	Magnum Bonum and Early White	June 11, '18	June 11, '18	Failed	"	"	"
New Zealand	Swedes	Yellow Globe	May 28, '18	May 28, '18	Nov. 18	"	"	"
Stackyard	Mangolds	Red Marvel (6 acres)	Nov. 30, '17	Nov. 30, '17	Aug. 16	Aug. 24	Aug. 24	12.3 tons
Sawpit	Wheat	Red Standard	Oct. 31, '17	Nov. 1, '17	Aug. 12	Aug. 20	Aug. 21	33 bush.
Broadbalk	"	"	Nov. 3, '17	Nov. 5, '17	Aug. 12	Aug. 20	Aug. 21	see p. 74
Little Hoos	"	"	Mar. 18, '18	Mar. 18, '18	Sept. 2	Sept. 7	Sept. 9	" 77
Hoos	Barley	Plumage Archer	Apr. 27, '18	Apr. 27, '18	Nov. 7	"	"	" 76
Barnfield	Mangolds	Sutton's Yellow Globe	May 14, '17	May 14, '17	June 22	July 2	July 2	" 69
Agdell	Clover	Red 1st Crop	"	"	Aug. 31	Sept. 3	Sept. 3	" 67
" "	"	2nd Crop	"	"	"	"	"	"
Greatfield	Grass	Rented out for Grazing	"	"	June 24	July 3	July 4	" 70
Park	"	1st Crop	"	"	Sept. 16	Sept. 24	Sept. 25	see p. 70
"	"	2nd Crop	"	"	"	"	"	" 70

NOTE.—7 acres of Sawpit were fallow. * Quantity sold after clamping, see pp. 79 and 83. † Estimated always on measurements, not weighed.

DATES OF SOWING AND HARVESTING (Harvest of 1919).

Field.	Crop.	Variety.	Sowing begun.	Sowing finished.	Cutting began.	Carting began.	Carting finished.	Yield per Acre.
Great Knott Wood, east	Wheat	{ Red Standard ...	Nov. 26, '18	Nov. 26, '18	Aug. 23	Sept. 8	Sept. 8	20 bush.
" west	"	{ Red Marvel ...	Mar. 25, '19	Mar. 25, '19	Sept. 18	Oct. 1	Oct. 1	(see p. 83)
Little Knott Wood	{ Grass and Clover Ley	{ Red Standard ...	Nov. 9, '18	Nov. 9, '18	Aug. 22	Sept. 5	Sept. 5	1 ton
		{ Red Clover, Alsike } 1st Crop	Apr. 8, '18	Apr. 8, '18	June 12	June 17	June 17	12 cwt.
		{ Timothy, Cocksfoot and Bent ... } 2nd Crop	" "	" "	Aug. 15	Aug. 18	Aug. 18	1 ton
Foster's, east	"	" "	May 10, '18	May 10, '18	June 21	June 26	June 30	16 cwt.
" west	"	" "	May 10, '18	" "	June 21	June 26	June 30	35 bush.
West Barnfield	Wheat	Red Standard	Nov. 19, '18	Nov. 25, '18	Aug. 21	Sept. 1	Sept. 1	28 bush.
Long Hoos, east	Barley	Plumage Archer	Apr. 18, '19	Apr. 18, '19	Sept. 8	Sept. 17	Sept. 17	"
" west	Mangolds	Sutton's Prize Winner, Yellow Globe	May 27, '19	May 27, '19	Oct. 19	"	"	94 tons
	Turnips	Sutton's Aberdeen Green Top	June 21, '19	June 21, '19	Oct. 28	"	"	"
	Potatoes	Turnip	May 20, '19	May 20, '19	Oct. 16	"	"	5½ tons
Great Harpenden	Oats	King Edward and Arran Chief	Oct. 3, '18	Oct. 3, '18	July 31	Aug. 12	Aug. 14	62 bush
New Zealand	Barley	Grey Winter	Apr. 11, '19	Apr. 17, '19	Sept. 2	Sept. 11	Sept. 16	36 bush.
Stackyard	"	Plumage Archer	Apr. 9, '19	Apr. 9, '19	Sept. 1	Sept. 8	Sept. 8	32 bush.
Sawpit	Wheat	" "	Oct. 16, '18	Oct. 23, '18	Aug. 15	Aug. 23	Aug. 27	34 bush.
Broadbalk	"	Red Standard	Oct. 25, '18	Oct. 26, '18	Aug. 14	Sept. 2	Sept. 5	see p. 74
Little Hoos	Barley	Plumage Archer	May 6, '19	May 6, '19	Sept. 11	Sept. 22	Sept. 22	" 77
Hoos	"	" "	Apr. 8, '19	Apr. 8, '19	Sept. 9	Sept. 16	Sept. 16	" 76
Barnfield	Mangolds	Sutton's Yellow Globe	May 14, '19	May 14, '19	Oct. 29	"	"	" 69
Agdell	Wheat	Red Standard	Oct. 18, '18	Oct. 18, '18	Aug. 11	Sept. 5	Sept. 5	" 67
Greatfield	Grass	Rented out for Grazing	"	"	"	"	"	"
Park	"	{ 1st Crop ...	"	"	June 16	June 18	June 18	" 70
	"	{ 2nd Crop ...	"	"	Sept. 23	Sept. 29	Sept. 30	" 70

DATES OF SOWING AND HARVESTING (Harvest of 1920).

Field.	Crop.	Variety.	Sowing began.	Sowing finished.	Cutting began.	Carting began.	Carting finished.	Yield per Acre.
Great Knott Wood, east	Clover ...	Red ...	May 7, '19	May 7, '19	June 25	July 16	July 16	3 tons
" west	Barley ...	Plumage Archer	Mar. 31, '20	Mar. 31, '20	Aug. 20	Aug. 30	Aug. 30	37 bush.
Little Knott Wood	{ Grass and { Clover Ley	{ Red Clover, Alsike } 1st Crop { Timothy, Cocksfoot } { and Bent ... } 2nd Crop	Apr. 8, '18	Apr. 8, '18	June 11	June 25	June 25	1½ tons
Foster's, east	Wheat ...	Yeoman ...	Sept. 25, '19	Sept. 25, '19	Sept. 2	Sept. 10	Sept. 10	22 bush.
" west	{ Grass and { Clover Ley	{ Red Clover, Alsike, Timothy, } { Cocksfoot and Bent ... }	May 10, '18	May 10, '18	June 28	July 14	July 14	17 tons
West Barnfield	Oats ...	Grey Winters ...	Oct. 3, '19	Oct. 3, '19	Aug. 9	Aug. 17	Aug. 23	*40 bush.
Long Hoos, east	Potatoes ...	Arran Chief ...	May 13, '20	May 22, '20	Oct. 25	...	...	{ 4 tons { 1 cwt.
" west	{ Barley ... { Wheat ...	Plumage Archer	Feb. 23, '20	Feb. 27, '20	Aug. 13	Aug. 26	Aug. 28	36 bush.
New Zealand	...	Yeoman ...	Oct. 17, '19	Oct. 17, '19	Aug. 10	Aug. 21	Aug. 26	32 bush.
Great Harpenden	...	Red Standard ...	Oct. 22, '19	Oct. 22, '19	Aug. 11	Aug. 25	Aug. 25	40 bush.
Stackyard	...	Red Standard ...	Oct. 18, '19	Oct. 18, '19	Aug. 10	Aug. 23	Aug. 23	32 bush.
Sawpit	Oats ...	Red Standard ...	Oct. 27, '19	Oct. 27, '19	Aug. 12	Aug. 26	Aug. 26	39 bush.
Broadbalk	Wheat ...	Grey Winters ...	Sept. 29, '19	Oct. 2, '19	Aug. 2	Aug. 16	Aug. 17	*40 bush.
Little Hoos	Swedes ...	Red Standard ...	Oct. 24, '19	Oct. 25, '19	Aug. 16	Aug. 28	Aug. 31	see p. 74
Hoos	Barley ...	Sutton's Magnum Bonum	May 18, '20	May 19, '20	Oct. 19	...	...	77
Barnfield	Mangolds	Plumage Archer	Mar. 1, '20	Mar. 1, '20	Aug. 14	Aug. 27	Aug. 27	76
Agdell	Swedes ...	Sutton's Yellow Globe	Apr. 29, '20	Apr. 29, '20	Dec. 5	...	...	69
Greatfield, north	Grass ...	Sutton's Magnum Bonum	June 14, '20	June 14, '20	Oct. 19	...	...	67
" south	...	...	...	...	July 19	Aug. 4	Aug. 18	81
Park	...	{ 1st Crop ... { 2nd Crop ...	...	...	Aug. 17	Aug. 31	Sept. 9	81
	...	...	...	...	June 22	June 25	June 26	70
	...	...	...	...	Sept. 10	Sept. 27	Sept. 28	70

* Sawpit and West Barnfield produce not kept separate this year.

CROP YIELDS ON THE EXPERIMENTAL PLOTS.

NOTE.—In each case the year refers to the harvest, *e.g.*, Wheat harvested in 1920.

1 acre =	0.404 Hectare	0.963 Feddan
1 bushel (Imperial) =	0.346 Hectolitre (36.346 litres) ...	0.184 Ardeb.
1 lb. (pound avoirdupois) =	0.453 Kilogramme	1.009 Rotls.
1 cwt. (hundredweight) =	50.8 Kilogrammes	113.0 Rotls. 1.366 Maunds
1 metric quintal ... =	100.0 Kilogrammes	
	220.46 lb.	
1 bushel per acre ... =	0.9 Hectolitre per Hectare ...	0.191 Ardeb per Feddan.
1 lb. per acre ... =	1.12 Kilogramme per Hectare ...	1.049 Rotls per Feddan.
1 cwt. per acre ... =	125.6 Kilogrammes per Hectare or 1.256 metric Quintals per Hectare	117.4 Rotls per Feddan.

In America the Winchester bushel is used = 35.236 litres. 1 English bushel = 1.032 American bushels.

Crops Grown in Rotation. Agdell Field.

PRODUCE PER ACRE.

Year.	CROP.	O.		M		C.	
		Unmanured		Mineral Manure.		Complete Mineral and Nitrogenous Manure.	
		5.	6.	3.	4.	1.	2.
		Fallow.	Beans or Clover.	Fallow.	Beans or Clover.	Fallow.	Beans or Clover.
EIGHTEENTH COURSE, 1916-19.							
1916	Roots (Swedes) cwt.	12.4	1.4	125.2	145.2	285.2	37.8*
1917	Barley Grain bush.	9.4	2.5	14.2	15.2	13.1	15.0
	Barley Straw ... cwt.	11.6	5.1	16.8	15.6	13.1	19.8
1918	Clover Hay ... cwt.	—	19.5	—	59.5	—	17.0
1919	Wheat Grain bush.	8.0	3.4	13.5	7.9	17.5	2.2
	Wheat Straw ... cwt.	14.2	7.4	19.0	17.5	17.2	2.3
PRESENT COURSE (19th), 1920.							
1920	Roots (Swedes) cwt.	20.4	2.2	163.8	270.0	262.2	56.4*

In 1920 Rape Cake was omitted from Plots 1 and 2.
In 1916 and 1920, the roots on Plot 2 were badly attacked by finger and toe disease.

RAIN AND DRAINAGE. MONTHLY MEAN FOR 50 YEARS, 1870—1920.

	Rainfall.	Drainage.			Drainage % of Rainfall.			Evaporation.		
		20-in.	40-in.	60-in.	20-in.	40-in.	60-in.	20-in.	40-in.	60-in.
		Gauge	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge	Gauge
	Ins.	Ins.	Ins.	Ins.				Ins.	Ins.	Ins.
September	2.330	0.754	0.717	0.657	32.4	30.8	28.2	1.576	1.613	1.673
October ...	3.233	1.848	1.798	1.669	57.2	55.6	51.6	1.385	1.435	1.564
November	2.795	2.132	2.169	2.047	76.3	77.6	73.2	0.663	0.626	0.748
December	2.869	2.437	2.527	2.414	84.9	88.1	84.1	0.432	0.342	0.455
January...	2.364	1.892	2.078	2.001	80.0	87.9	84.6	0.472	0.286	0.363
February	2.008	1.480	1.584	1.513	73.7	78.9	75.4	0.528	0.424	0.495
March ...	2.103	1.148	1.285	1.215	54.6	61.1	57.8	0.955	0.818	0.888
April ...	2.012	0.653	0.727	0.695	32.5	36.1	34.5	1.359	1.285	1.317
May ...	2.025	0.475	0.537	0.502	23.5	26.5	24.8	1.550	1.488	1.523
June ...	2.375	0.595	0.616	0.595	25.1	25.9	25.0	1.780	1.759	1.780
July ...	2.667	0.680	0.703	0.654	25.5	26.4	24.5	1.987	1.964	2.013
August ...	2.719	0.740	0.741	0.697	27.2	27.3	25.6	1.979	1.978	2.022
Year ...	29.500	14.834	15.482	14.659	50.3	52.5	49.7	14.666	14.018	14.841

All four gauges measure $\frac{1}{1000}$ acre. Drain gauge records start Sept. 1st, 1870. Rain gauge records start Feb., 1853. For purpose of comparison the above figures deal with the same period as the drain gauge records, viz., Sept. 1st, 1870, to Aug. 31st, 1920.

METEOROLOGICAL RECORDS, 1918-20

	Rain.			Drainage through soil.			Bright Sunshine.	Temperature. (Mean)			
	Total Fall.		No. of Rainy Days. (0.01 inch or more)	20 ins. deep.	40 ins. deep.	60 ins. deep.		Max.	Min.	1 ft. in ground.	Solar Max.
	5-inch Funnel Gauge.	$\frac{1}{1000}$ Acre Gauge.									
	Inches.	Inches.	No.	Inches.	Inches.	Inches.	Hours.	°F.	°F.	°F.	F.
1918											
Jan. ...	2.314	2.990	15	2.951	3.059	3.045	57.2	42.6	31.4	37.5	71.7
Feb. ...	1.027	1.232	15	0.537	0.553	0.526	66.3	46.9	36.6	40.8	78.2
Mar. ...	0.861	0.985	8	0.024	0.078	0.073	141.4	49.9	33.2	40.5	94.1
April ...	3.946	4.548	17	3.481	3.537	3.294	97.2	48.8	36.5	43.1	91.4
May ...	2.258	2.471	10	0.487	0.633	0.640	207.5	63.5	45.1	52.3	116.9
June ...	0.862	0.998	12	0.003	0.024	0.027	226.5	64.3	45.5	57.1	123.4
July ...	3.215	3.447	18	0.654	0.698	0.620	200.4	68.0	51.6	60.0	124.5
Aug. ...	1.163	1.331	11	0.004	0.032	0.040	178.9	68.9	52.9	61.4	122.9
Sept. ...	4.974	5.421	24	2.293	2.181	2.044	155.3	60.0	47.6	55.8	111.8
Oct. ...	1.703	1.964	15	1.094	1.140	1.065	78.8	53.5	41.9	49.6	88.1
Nov. ...	2.518	2.674	17	2.165	2.064	1.947	70.8	47.4	35.3	43.9	75.1
Dec. ...	2.839	3.175	26	2.814	2.897	2.754	36.5	48.7	39.8	44.3	65.1
Total or Mean	27.680	31.236	188	16.507	16.896	16.075	1516.8	55.2	41.5	48.9	96.9
1919											
Jan. ...	3.840	4.281	25	2.964	3.079	2.980	32.7	40.3	31.5	38.3	60.9
Feb. ...	2.901	3.290	14	3.975	3.961	3.925	48.1	38.7	27.9	35.3	73.1
Mar. ...	3.432	3.747	19	2.796	2.871	2.801	107.3	43.9	33.2	38.7	88.0
April ...	3.311	3.693	16	1.970	2.034	2.020	120.4	51.3	36.2	43.1	106.0
May ...	0.460	0.535	5	0.208	0.359	0.370	257.7	65.1	45.1	52.7	119.0
June ...	1.045	1.159	7		0.009	0.018	230.7	66.6	47.6	59.6	124.3
July ...	2.625	2.767	15	0.330	0.394	0.379	120.1	63.0	49.0	57.7	114.2
Aug. ...	3.239	3.404	12	1.337	1.389	1.346	228.9	70.3	52.2	61.4	124.1
Sept. ...	1.191	1.293	10	0.076	0.118	0.093	158.3	63.4	47.1	57.2	112.2
Oct. ...	0.977	1.073	14	No drainage this month			136.2	51.4	36.5	46.7	93.5
Nov. ...	2.049	2.239	20	1.569	1.331	1.238	48.6	41.4	32.4	40.5	67.4
Dec. ...	5.048	5.573	24	5.717	5.836	5.801	33.4	46.1	35.3	40.0	63.2
Total or Mean	30.118	33.054	181	20.942	21.381	20.971	1522.4	53.5	39.5	47.6	95.5
1920											
Jan. ...	2.730	3.015	21	2.548	2.620	2.590	51.0	45.7	34.3	39.6	66.5
Feb. ...	0.432	0.511	10	0.044	0.136	0.108	84.2	48.1	34.8	40.2	79.9
Mar. ...	1.403	1.629	17	0.399	0.405	0.407	141.4	52.3	36.4	42.5	98.6
April ...	4.246	4.585	20	3.167	3.183	3.163	90.3	52.3	40.8	47.1	100.8
May ...	1.208	1.336	13	0.009	0.064	0.061	241.6	61.1	45.1	52.7	118.9
June ...	1.832	1.927	12	0.045	0.079	0.098	233.5	65.6	48.8	59.0	124.9
July ...	4.613	4.780	20	2.036	2.060	1.983	148.2	64.3	50.2	59.4	120.0
Aug. ...	1.256	1.363	8	0.148	0.230	0.211	150.7	63.0	48.8	58.1	118.4
Sept. ...	1.961	2.131	13	0.417	0.388	0.368	110.5	62.9	48.1	55.8	109.3
Oct. ...	1.427	1.530	10	0.592	0.666	0.618	144.8	57.7	42.2	51.9	99.7
Nov. ...	1.687	1.846	9	1.365	1.206	1.129	71.8	48.2	35.3	43.4	77.4
Dec. ...	2.288	2.545	25	2.244	2.362	2.284	37.7	43.0	34.4	40.0	58.7
Total or Mean	25.083	27.198	178	13.014	13.399	13.020	1505.7	55.4	41.6	49.1	97.8

* On January 18 and 19, 1918, the cylinders and tank of 60" gauge were submerged: the figures for the 40" gauge are adopted (2.735") and included in above total.

Mangolds, Barn Field, 1918, 1919, 1920.

Roots since 1856. Mangolds since 1876.
Produce per Acre.

Strip.	Strip Manures.	Cross Dressings.				
		O.	N.	A.	A.C.	C.
		None.	Nitrate of Soda	Ammon. Salts.	Ammon. Salts and Rape Cake.	Rape Cake.
1918.						
		Tons.	Tons.	Tons.	Tons.	Tons.
1	Dung only	(R. 17 98 (L. 2 79)	33 79 4 17	25 39 3 39	24 45 3 16	24 48 3 69
2	Dung, Super., Potash ...	(R. 25 26 (L. 3 11)	38 58 4 63	34 73 4 45	34 04 5 02	28 30 3 88
4	Complete Minerals ...	(R. 4 61 (L. 0 82)	(R. 28 59 (L. 3 15) (R. 27 65 (L. 3 34)	22 39 2 03	29 65 3 63	16 88 2 11
5	Superphosphate only ...	(R. 5 65 (L. 0 93)	25 18 2 49	12 50 2 56	12 33 2 11	12 50 1 79
6	Super. and Potash ...	(R. 4 58 (L. 0 86)	25 09 2 45	20 30 1 83	25 56 2 94	15 03 1 46
7	Super., Sulphate of Mag., and Sodium Chloride	(R. 4 71 (L. 0 84)	28 81 2 82	23 94 2 41	25 01 3 05	17 21 1 97
8	None	(R. 3 18 (L. 0 69)	19 92 2 81	11 05 2 94	10 32 2 53	9 76 1 89
9	Sodium Chloride, Nit. Soda, Sulph. Potash, and Sulph. Mag. ...	(R. 26 56 (L. 2 57)				
1919						
1	Dung only	(R. 9 05 (L. 3 60)	17 49 6 36	14 14 4 55	10 60 4 74	11 28 4 83
2	Dung, Super., Potash ...	(R. 13 97 (L. 5 67)	18 51 8 89	19 87 8 23	15 24 7 60	18 17 6 92
4	Complete Minerals ...	(R. 2 46 (L. 0 97)	(R. 12 98 (L. 6 55) (R. 12 86 (L. 5 69)	7 75 4 43	11 77 6 86	9 57 3 48
5	Superphosphate only ...	(R. 1 97 (L. 0 81)	9 98 4 38	1 13 1 00	3 05 1 86	4 58 1 88
6	Super. and Potash ...	(R. 2 44 (L. 0 91)	14 46 5 81	11 45 4 54	13 14 5 98	12 08 2 84
7	Super., Sulphate of Mag., and Sodium Chloride	(R. 3 13 (L. 0 91)	15 93 5 23	14 48 4 73	14 98 5 31	13 94 2 98
8	None	(R. 2 16 (L. 0 82)	7 63 3 63	3 08 1 58	4 06 1 63	6 50 2 57
9	Sodium Chloride; Nit. Soda, Sulph. Potash and Sulph. Mag. ...	(R. 20 38 (L. 5 14)				
1920.						
1	Dung only	(R. 18 99 (L. 3 51)	30 26 4 27	21 38 3 95	23 89 4 62	25 12 5 31
2	Dung, Super., Potash ...	(R. 26 84 (L. 4 78)	37 69 6 74	33 11 6 69	32 67 7 28	28 73 5 94
4	Complete Minerals ...	(R. 4 54 (L. 0 96)	(R. 26 10 (L. 4 68) (R. 21 21 (L. 2 90)	20 81 3 54	26 35 4 75	12 39 2 17
5	Superphosphate only ...	(R. 4 82 (L. 0 95)	20 73 3 33	7 72 2 84	8 31 2 86	8 48 2 13
6	Super. and Potash ...	(R. 4 65 (L. 1 04)	21 50 3 49	18 94 2 84	24 74 4 39	9 89 2 25
7	Super., Sulphate of Mag., and Sodium Chloride	(R. 4 91 (L. 1 28)	21 84 3 27	19 95 3 08	19 05 4 13	11 86 2 41
8	None	(R. 3 99 (L. 0 82)	13 81 2 69	5 91 2 19	4 44 1 92	6 17 2 04
9	Sodium Chloride; Nit. Soda; Sulph. Potash and Sulph. Mag. ...	(R. 29 35 (L. 4 86)				

R.—roots. L.—leaves.

Notes: 1918—All Potash, Magnesia, and Rape Cake omitted.

Hay. The Park Grass Plots. 1918, 1919, 1920.

Plot.	Manuring.	Yield of Hay per acre.			Yield of Hay per acre.			Yield of Hay per acre.			Plot.
		1918.			1919.			1920.			
		1st Crop.	2nd Crop.	Total.	1st Crop.	2nd Crop.	Total.	1st Crop.	2nd Crop.	Total.	
1	Single dressing Amm. Salts (= 43 lbs. N.); (with Dung 8 years, 1856-63)	9.8	8.3	17.1	7.8	17.8	23.8	10.2	34.0	1	
2	Unmanured; (after Dung 8 years, 1856-63)	17.2	7.6	24.8	8.5	18.9	24.3	7.8	32.1	2	
3	Unmanured	16.5	3.5	20.0	4.2	10.6	17.5	5.2	22.7	3	
4-1	Superphosphate of Lime	16.0	2.5	18.5	2.0	8.4	19.2	5.5	24.7	4-1	
4-2	Superphosphate of Lime and double dressing Amm. Salts (= 86 lbs. N.)	14.7	2.8	17.5	3.7	7.8	15.7	4.1	19.8	4-2	
5-1	(N. half) Unmanured; following double dressing Amm. Salts (= 86 lbs. N.) 1856-97	15.1	3.4	18.5	3.8	6.0	16.0	4.2	20.0	5-1	
5-2	(S. half) Super., Sulphate of Potash; following double dressing Amm. Salts (= 86 lbs. N.) 1856-97	24.2	4.3	28.5	9.1	14.0	24.1	6.8	30.9	5-2	
6	Complete Mineral Manure as plot 7; following double dressing Amm. Salts (= 86 lbs. N.) 1856-68	17.6	3.4	21.0	6.1	8.0	25.0	6.2	31.2	6	
7	Complete Mineral Manure	18.5	5.0	23.5	9.4	11.3	25.6	5.2	30.8	7	
8	Mineral Manure without Potash	26.3	10.5	36.8	17.4	26.4	31.4	10.0	41.4	8	
9	Complete Mineral Manure and double dressing Amm. Salts (= 86 lbs. N.)	12.1	2.8	14.9	4.4	8.2	10.3	5.4	15.7	9	
10	Mineral Manure (without Potash) and double dressing Amm. Salts (= 86 lbs. N.)	24.5	5.8	30.3	13.0	20.3	20.8	8.8	29.6	10	
11-1	Complete Mineral Manure and treble dressing Amm. Salts (= 129 lbs. N.)	41.5	7.9	49.4	23.0	36.1	35.3	14.8	50.1	11-1	
11-2	As plot 11-1 and Silicate of Soda	37.9	7.3	45.2	19.8	32.9	31.7	14.3	46.0	11-2	

12	Unmanured																				
13	{ Dung in 1905, and every fourth year since (omitted in 1917) { Fish Guano in 1907 and every fourth year since	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	{ Complete Mineral Manure and double dressing Nitrate of Soda (= 86 lbs. N.) { ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	{ Complete Mineral Manure as plot 7; following double dressing Nitrate of Soda (= 86 lbs. N.) 1858-75 { ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	{ Complete Mineral Manure and single dressing Nitrate of Soda (= 43 lbs. N.) { ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	{ Single dressing Nitrate of Soda (= 43 lbs. N.) { ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	{ Potash, Sulphate of Soda, Magnesia, and double dressing Sulphate of Amm. (= 86 lbs. N.) 1905 and since... { ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	{ Farmyard Dung in 1905 and every 4th year since (omitted in 1917) { ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	{ Farmyard Dung in 1905 and every 4th year since (omitted 1917); each intervening year, plot 20 receives Sulphate of Potash, Superphosphate and Nitrate of Soda (= 26 lbs. N.) { ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Ground lime was applied to the Southern portion (lined) of the plots at the rate of 2,000 lb. to the acre in the Winter of 1903, 1907, 1915, and at the rate of 2,500 lbs. to the acre in the Winter of 1920, except where otherwise stated. In 1918 all Sulphate of Potash and Sulphate of Magnesia were omitted from the Mineral Manures in plots 6, 7, 9, 11-1, 11-2, 14, 15, 16, and 18; also Potash was omitted from plot 5-2, and Magnesia from plots 8 and 10. In 1919, instead of Sulphate of Potash, an equivalent amount of Muriate of Potash was used. In 1919 and 1920 an equivalent amount of Sulphate of Ammonia was used instead of Muriate of Ammonia. Up to 1914 the lined and unlined plot results were not separately given in the Annual Report, but the mean of the two was given. From 1915 onwards the separate figures are given. In the reports for 1913, 1914, 1915-17 the manuring of plot 5-2 was incorrectly given as complete Mineral Manure, instead of as Superphosphate and Sulphate of Potash.

The Park Grass Plots.
 BOTANICAL COMPOSITION, PER CENT.

Plot.	Manuring.	Liming.	Crop.	1918.			1919.			"Other Orders" consist largely of	Plot.
				Gram-ineae.	Legu-minosae.	Other Orders.	Gram-ineae.	Legu-minosae.	Other Orders.		
1	Single Amm. Salts, (with Dung 8 years, 1856-63) ...	Limed ...	1st	—	—	—	77·71	·68	21·62	Rumex acetosa and Centaurea nigra	1
			2nd	—	—	—	82·66	·27	17·07		
1	" " " " " " " " " "	Not limed	1st	—	—	—	86·36	—	13·65	Rumex acetosa ...	1
			2nd	—	—	—	93·70	—	6·30		
2	Unmanured: (after Dung 8 years, 1856-63) ...	Limed ...	1st	—	—	—	61·13	5·65	33·22	Plantago lanceolata, Ranunculus spp., and Centaurea nigra	2
			2nd	—	—	—	62·55	7·16	30·30		
2	" " " " " " " " " "	Not limed	1st	—	—	—	57·94	4·38	37·68	Plantago lanceolata, Centaurea nigra, Conopodium denudatum	2
			2nd	—	—	—	55·90	4·27	39·74		
3	Unmanured ...	Limed ...	1st	52·67	10·88	36·44	58·59	5·51	35·90	Plantago lanceolata and Centaurea nigra	3
			2nd	50·00	7·16	42·84	50·80	7·89	41·31		
3	" " " " " " " " " "	Not limed	1st	45·04	6·30	48·65	47·62	4·55	47·82	Plantago lanceolata, Leontodon hispidus and Poterium sanguisorba ...	3
			2nd	44·27	2·51	53·21	54·40	4·13	41·50		
4-1	Superphosphate of Lime ...	Limed ...	1st	41·30	10·82	47·90	53·63	9·66	36·71	Plantago lanceolata, Rumex acetosa, and Centaurea nigra	4-1
			2nd	43·20	6·05	50·65	54·17	6·19	39·64		
4-1	" " " " " " " " " "	Not limed	1st	49·17	3·48	47·35	52·77	2·76	44·47	Plantago lanceolata and Rumex acetosa	4-1
			2nd	50·36	1·86	47·77	46·74	2·67	50·60		
4-2	Super. of Lime and double Amm. Salts ...	Limed ...	1st	96·51	—	3·48	98·17	—	1·82	Rumex acetosa ...	4-2
			2nd	98·77	—	1·23	98·81	—	1·18		
4-2	" " " " " " " " " "	Not limed	1st	88·94	·12	10·96	91·94	—	8·05	Rumex acetosa ...	4-2
			2nd	96·96	·28	2·74	97·74	—	2·26		
5-1	Unmanured, following double Amm. Salts, 1856-97 ...	Whole plot	1st	—	—	—	77·81	·39	21·80	Rumex acetosa and Centaurea nigra	5-1
			2nd	—	—	—	67·70	1·98	30·31		
5-2	Super. and Sulph. Potash following double Amm. Salts, 1856-97 ...	Whole plot	1st	65·69	7·10	27·20	63·19	4·54	32·27	Rumex acetosa and Luzula campestris	5-2
			2nd	57·31	8·87	33·82	60·33	12·22	27·46		
6	Complete Mineral Manure following double Amm. Salts, 1856-68 ...	Whole plot	1st	57·63	16·29	26·08	57·18	11·46	31·37	Rumex acetosa and Conopodium denudatum	6
			2nd	70·78	4·32	24·90	69·01	13·48	17·52		
7	Complete Mineral Manure ...	Limed ...	1st	70·75	16·04	13·19	59·10	19·62	21·28	Rumex acetosa, Ranunculus spp. and Conopodium denudatum	7
			2nd	74·30	13·68	12·03	62·62	25·23	12·15		
7	" " " " " " " " " "	Not limed	1st	57·12	11·11	31·79	52·05	8·77	39·18	Rumex acetosa, Conopodium denudatum, and Achillea millefolium	7
			2nd	58·33	5·20	36·46	56·32	18·61	25·08		
8	Mineral Manure (without Potash) ...	Limed ...	1st	55·29	6·23	38·50	58·46	7·51	34·02	Rumex acetosa and Plantago lanceolata	8
			2nd	49·79	5·80	44·40	53·01	7·97	39·62		
8	" " " " " " " " " "	Not limed	1st	37·68	6·32	56·01	46·62	10·55	42·82	Plantago lanceolata and Rumex acetosa	8
			2nd	34·88	7·49	57·63	52·03	9·19	38·77		

9	Complete Mineral Manure, and double Amm. Salts	Limed ...	97.81	—	2.18	95.85	1.09	4.05	Rumex acetosa	...	...	9
9	" " " " " "	" Not limed	99.26	—	.73	98.40	.97	.61	" "	...	...	9
10	Mineral Manure (without Potash) and double Amm. Salts	Limed ...	79.91	—	20.10	85.00	—	15.00	Rumex acetosa	...	...	10
10	" " " " " "	" " "	97.34	—	2.65	94.75	—	5.24	" "	...	...	10
11-1	Complete Mineral Manure and treble Amm. Salts	Limed ...	99.68	—	.31	99.59	—	.41	Rumex acetosa	...	...	11-1
11-1	" " " " " "	" Not limed	100.00	—	—	99.77	—	.23	" "	...	...	11-1
11-2	As plot 11-1 and Silicate of Soda	Limed ...	87.86	—	12.13	92.60	—	7.40	Rumex acetosa	...	...	11-2
11-2	" " " " " "	" " "	99.59	—	.41	97.36	—	2.63	" "	...	...	11-2
12	Unmanured	Whole plot	99.63	—	.37	99.84	—	.16	Rumex acetosa	...	...	12
13	Dung in 1905 and every 4th year since (omitted in 1917); Fish Guano in 1907 and every 4th year since	Limed ...	100.00	—	—	99.49	—	.52	Rumex acetosa	...	...	13
13	" " " " " "	" Not limed	97.50	—	2.50	98.86	—	1.14	Rumex acetosa	...	...	13
14	Complete Mineral Manure and double Nitrate of Soda	Whole plot	100.00	.06	.35	100.00	—	.13	Rumex acetosa	...	...	14
15	As plot 7, following double Nitrate of Soda, 1858-75	Limed ...	99.59	—	—	99.86	—	.38	Plantago lanceolata and Conopodium denudatum	...	...	15
16	As plot 7, and single Nitrate of Soda	" Not limed	100.00	—	1.47	99.62	—	.25	Rumex acetosa	...	...	16
16	" " " " " "	" " "	98.54	—	.18	99.75	—	.38	Plantago lanceolata and Conopodium denudatum	...	...	16
17	Single Nitrate of Soda	Whole plot	99.82	—	—	99.82	—	.25	Rumex acetosa	...	...	17
18	Potash, Sulph. Soda, Magnesia and double Sulph. Amm., 1905 and since	Limed ...	—	—	—	54.80	5.34	39.87	Plantago lanceolata and Conopodium denudatum	...	...	18
19	Farmyard Dung, 1905, and every 4th year since (omitted in 1917)	" Not limed	—	—	—	50.56	8.19	41.24	Rumex acetosa and Conopodium denudatum	...	...	19
20	Dung in 1905 and every 4th year since (omitted in 1917). Each intervening year Sulph. Potash, Super. and Nitrate of Soda	Whole plot	—	—	—	86.89	.82	12.28	Rumex acetosa and Conopodium denudatum	...	...	20
	" " " " " "	" " "	—	—	—	92.12	.07	20.09	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	79.83	.07	20.09	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	96.23	.26	3.51	Plantago lanceolata and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	92.92	2.41	4.68	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	95.29	.74	3.97	Plantago lanceolata and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	69.25	5.39	25.35	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	75.32	6.99	17.70	77.14	6.54	16.31	Plantago lanceolata and Conopodium denudatum	...	...
	" " " " " "	" " "	73.26	3.15	23.58	89.60	.78	9.62	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	90.69	.89	8.42	Plantago lanceolata and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	85.98	1.17	12.84	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	86.60	1.26	12.14	Plantago lanceolata and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	58.53	.43	41.04	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	66.55	.24	33.21	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	68.93	—	31.07	Plantago lanceolata and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	80.04	—	19.95	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	72.80	6.59	20.61	75.21	6.17	18.61	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	83.97	7.54	8.50	83.43	9.34	7.22	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	—	—	—	81.85	4.72	13.44	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	78.44	9.26	12.29	81.85	4.72	13.44	Rumex acetosa and Conopodium denudatum	...	...
	" " " " " "	" " "	88.10	4.29	7.61	91.93	4.13	3.94	Rumex acetosa and Conopodium denudatum	...	...

WHEAT. BROADBALK FIELD, 1918, 1919, 1920.

1918.

1919.

1920.

Manures.	Top portion.			Bottom portion.			Top portion.			Bottom portion.			Top portion.			Bottom portion.		
	Dressed Grain.		Straw per Acre.	Dressed Grain.		Straw per Acre.	Dressed Grain.		Straw per Acre.	Dressed Grain.		Straw per Acre.	Dressed Grain.		Straw per Acre.	Dressed Grain.		Straw per Acre.
	Yield per Acre.	lb. Bushels.		Yield per Acre.	lb. Bushels.		Yield per Acre.	lb. Bushels.		Yield per Acre.	lb. Bushels.		Yield per Acre.	lb. Bushels.		Yield per Acre.	lb. Bushels.	
			Weight per Bushel.			Weight per Bushel.			Weight per Bushel.			Weight per Bushel.			Weight per Bushel.			Weight per Bushel.
Farmyard Manure ...	30.8	65.3	38.8	39.9	22.8	62.7	19.0	27.1	62.3	21.6	28.3	61.5	38.4	33.2	62.0	42.6	35.2	34.8
Unmanured ...	11.5	64.1	9.9	9.1	9.2	61.0	7.0	9.8	60.4	7.4	9.4	61.0	8.8	8.1	60.9	7.8	12.6	10.3
Complete Mineral Manure ...	9.1	64.6	10.0	10.1	9.8	60.3	7.8	10.0	61.5	7.0	8.2	61.3	8.3	8.2	62.1	8.0	14.5	12.1
As 5, and Single Amm. Salts ...	16.5	64.8	23.5	15.4	19.5	61.1	15.7	18.4	61.6	13.9	15.3	61.5	16.1	15.1	61.2	14.9	23.2	21.4
As 5, and Double Amm. Salts ...	25.2	64.6	35.1	33.8	27.6	61.4	21.4	33.3	61.6	24.7	21.6	61.3	25.7	30.9	60.9	36.5	32.1	32.9
As 5, and Treble Amm. Salts ...	27.7	65.1	45.6	44.2	29.6	61.7	29.3	37.4	61.7	29.6	27.1	61.8	45.4	28.8	60.4	42.3	36.6	41.1
As 5, and Single Nitrate of Soda ...	21.5	64.9	30.7	25.9	21.0	60.2	17.5	23.9	61.0	18.8	23.6	61.1	25.7	26.8	61.6	27.4	—	—
Double Amm. Salts alone ...	13.8	64.5	16.9	18.8	16.4	59.8	13.6	15.2	58.9	13.1	15.7	59.5	19.0	13.0	60.0	18.0	20.0	18.4
As 10, and Superphosphate ...	17.9	64.5	21.7	21.1	10.7	57.6	16.1	12.4	57.0	15.7	13.6	59.7	19.1	9.6	58.9	21.5	22.9	22.3
As 10, and Super. and Sulph. Soda ...	20.8	64.6	25.8	27.4	17.3	58.2	16.2	18.5	57.8	19.9	19.3	60.3	27.9	18.4	60.8	28.1	29.1	28.0
As 10, and Super. and Sulph. Potash ...	20.3	65.0	27.2	31.6	29.3	60.6	25.9	27.4	60.8	24.8	24.9	61.4	29.6	28.9	61.1	39.0	31.0	31.5
As 10, and Super. and Sulph. Magnesia ...	21.4	64.9	24.2	32.1	17.7	58.3	19.2	27.5	59.3	23.6	15.5	59.8	26.1	18.2	59.7	28.8	28.8	28.0
Double Amm. Salts in Autumn and Minerals ...	25.9	65.0	33.0	31.5	22.5	60.3	18.3	20.7	60.4	15.8	17.6	61.1	24.3	16.1	61.1	23.0	29.9	29.7
Double Nitrate and Minerals ...	29.7	65.4	41.8	41.6	32.8	60.9	29.6	32.6	61.3	29.7	25.2	61.4	30.8	25.5	61.2	35.0	—	—
Minerals alone, or double Amm. Salts alone in alternate years	17.5	65.0	20.3	28.8	11.7	62.9	8.1	13.8	62.4	9.4	19.1	61.3	19.6	20.0	61.5	21.1	29.9	29.5
Rape Cake alone	12.4	65.0	10.1	12.6	30.2	60.6	21.9	30.0	61.0	25.3	6.3	58.4	6.9	6.4	59.9	7.7	14.9	13.0
Mineral Manure (without Super.) and Amm. Salts	17.0	65.0	13.7	16.8	13.5	61.5	9.5	12.0	61.6	11.2	11.8	60.3	10.9	13.0	60.4	14.3	*25.4	*25.7
	17.3	65.3	19.8	—	21.7	61.5	18.6	—	—	—	15.4	59.6	18.7	—	—	—	—	—

* Average for 20 years, 1893-1912.

1918, 1919, Sulphate of Potash omitted from plots 5, 6, 7, 8, 9, 13, 15, 16, 17 or 18, 20. Sulphate of Soda omitted from plot 12.

Sulphate of Magnesia omitted from plot 14.

1918, 1919, 1920. Rape Cake omitted from plot 19.

Plot 17 received Mineral dressing in 1919. Amm. Salts in 1918, 1920.

Plot 18 " " " " 1918, 1920.

From 1917 onwards, Muriate of Ammonia has been replaced by an equivalent amount of Sulphate of Ammonia.

Hoos Field (formerly Potato Plots). No Manure since 1901.

Plot.	Manuring given prior to 1901.	1918. BARLEY.				1919. BARLEY.			
		Dressed Grain.	Straw per Acre.	Total Produce per Acre.	Dressed Grain.	Straw per Acre.	Total Produce per Acre.		
		Yield per Acre.	Weight per Bush.		Yield per Acre.	Weight per Bush.			
Previous Cropping: Potatoes, 1876-1901; Barley, 1902 and 1903; Oats, 1904; Barley, 1905-1911; Oats, 1912; Barley, 1913 and 1914; Oats, 1915; Barley, 1916-17.									
1	Unmanured	8.4	52.4	4.0	912	4.7	52.3	3.2	645
2	Unmanured 1882 to 1901, previously	...	...	...	...	...	...	...	...
3	Dung only	11.1	51.8	5.7	1243	7.5	53.1	4.6	964
4	Dung 1883 to 1901	16.2	54.8	8.6	1878	11.5	53.1	6.4	1370
	Dung 1883 to 1901	16.3	53.1	7.5	1728	12.7	52.9	6.7	1475
Previous Cropping: Potatoes, 1876-1901; Barley, 1902-1903; Oats, 1904; Plots 5, 7, 9, Cow Peas (failed), 1905; Plots 6, 8, 10, Red Clover, 1905; Red Clover, 1906-1911; Oats, 1912; Barley, 1913 and 1914; Oats, 1915; Barley, 1916-17.									
5	Ammonium Salts...	11.6	54.5	7.0	1440	7.6	51.3	5.1	1004
6	Nitrate of Soda...	15.8	54.1	7.1	1723	7.7	51.8	5.1	1014
7	Ammonium Salts and Mixed Minerals	21.0	54.1	11.1	2422	12.1	53.1	5.9	1339
8	Nitrate of Soda and Mixed Minerals	19.2	53.5	8.2	1973	9.3	53.0	5.5	1150
9	Superphosphate	14.4	54.1	7.6	1660	8.8	53.6	4.1	965
10	Mixed Minerals	14.8	53.4	6.7	1561	10.7	53.5	5.3	1278

NOTE.—In 1920 these plots were fallowed.

Permanent Barley Plots. Hoos Field, 1918, 1919, 1920.
PRODUCE PER ACRE

Plot.	MANURING.	1918			1919			1920			Average 60 years, 1852-1911.	
		Dressed Grain.	Weight per Bushel.	Straw.	Dressed Grain.	Weight per Bushel.	Straw.	Dressed Grain.	Weight per Bushel.	Straw.	Dressed Grain.	Straw.
		Bush.	lb.	cwt.	Bush.	lb.	cwt.	Bush.	lb.	cwt.	Bush.	cwt.
1 O	Unmanured	18.3	52.1	7.9	5.5	52.0	3.6	6.4	55.4	3.2	14.3	8.4
2 O	Superphosphate only	27.7	51.7	11.0	11.6	54.8	5.7	13.2	53.4	7.5	19.7	10.0
3 O	Alkali Salts only	16.9	51.7	7.9	9.0	54.4	5.8	9.1	52.9	4.7	15.2	8.8
4 O	Complete Minerals	24.9	52.2	11.5	14.6	54.1	8.4	13.7	52.6	6.3	19.7	11.1
5 O	Potash and Superphosphate	14.7	51.5	7.3	9.4	55.0	6.1	5.2	54.5	3.4		
1 A	Ammonium Salts only	25.1	50.7	11.5	11.2	52.5	6.5	17.3	51.2	8.1	25.5	14.7
2 A	Superphosphate and Amm. Salts	41.4	50.6	17.7	18.1	51.4	9.1	22.8	51.7	10.7	38.2	22.0
3 A	Alkali Salts and Amm. Salts	23.4	52.1	11.2	15.7	53.4	9.1	16.1	53.1	9.6	28.0	16.9
4 A	Complete Minerals and Amm. Salts	34.9	51.7	15.7	24.5	54.6	12.5	38.5	52.7	14.9	41.5	25.0
5 A	Potash, Super. and Amm. Salts	38.6	52.1	20.3	23.5	54.6	14.0	30.4	53.4	16.3		
1 AA	Nitrate of Soda only	26.7	51.3	14.7	16.1	53.3	9.7	20.2	53.3	12.1	29.3	17.8
2 AA	Super. and Nitrate of Soda	46.4	52.5	22.6	30.1	54.1	14.4	37.3	53.3	16.1	43.1	26.3
3 AA	Alkali Salts and Nitrate of Soda	21.1	52.0	13.3	16.7	54.1	11.3	14.7	53.1	12.3	30.0	19.3
4 AA	Complete Minerals and Nitrate of Soda	43.3	50.6	16.9	28.0	54.1	15.1	31.8	54.1	15.3	42.7	27.3
1 AAS	As Plot 1 AA and Silicate of Soda	29.2	51.6	14.5	20.3	54.0	12.9	27.7	53.8	14.8	32.8 (1)	19.7 (1)
2 AAS	" " 2 AA	45.1	52.7	21.7	27.8	52.9	12.0	39.4	53.7	15.7	42.3 (1)	26.0 (1)
3 AAS	" " 3 AA	24.0	52.7	16.1	19.8	54.0	12.6	23.9	52.8	15.8	35.2 (1)	21.7 (1)
4 AAS	" " 4 AA	39.5	51.3	20.3	20.5	54.8	12.2	30.5	54.3	15.5	43.6 (1)	27.7 (1)
1 C	Rape Cake only	18.7	52.5	9.3	10.7	53.9	5.6	11.9	53.9	5.8	38.3	22.1
2 C	Superphosphate and Rape Cake	21.9	52.0	11.1	11.7	54.6	6.7	12.1	53.4	5.6	40.5	23.6
3 C	Alkali Salts and Rape Cake	16.6	51.3	9.2	8.5	54.5	5.3	9.7	54.0	4.8	36.9	22.3
4 C	Complete Minerals and Rape Cake	17.3	52.6	8.9	10.0	54.1	6.2	10.2	54.5	4.5	40.5	24.5
7-1	Unmanured (after dung 20 years, 1852-71)	26.7	52.4	12.0	12.1	54.5	6.5	17.5	53.6	8.0	24.8 (2)	14.8 (2)
7-2	Farmyard Manure	58.8	53.0	28.7	32.1	55.2	18.2	48.3	54.3	27.3	47.1	29.6
6-1	Unmanured	20.9	52.3	9.2	7.6	53.5	4.3	13.3	53.5	7.3		
6-2	Ashes from Laboratory Furnace	19.5	50.6	8.5	6.8	53.5	3.9	10.2	53.8	5.7		
1 N	Nitrate of Soda only	26.3	50.6	14.0	12.5	53.0	8.6	10.3	53.3	6.4		
2 N	" " "	27.8	52.1	15.9	19.5	54.9	11.4	20.3	53.0	10.5		

(1) 48 years, 1864-1911. (2) 40 years, 1872-1911.
 Notes:—1918. Sulphate of Potash, Sulphate of Magnesia and Rape Cake omitted in all cases.
 1919 and 1920. Rape Cake omitted in all cases. Also since 1917 Muriate of Ammonia replaced by equivalent amount of Sulphate of Ammonia.

Little Hoos Field PLAN OF ROTATION PLOTS

Arranged to test the RESIDUAL VALUE of VARIOUS MANURES in one, two, three, and four years after their application. Produce per acre.

Plot.	Manure per Acre.	Year of Last Dressing.	1918 (15th Season). Wheat.			1919 (16th Season). Barley.			1920 (17th Season). Swedes.		
			Dress'd Grain Bush. per Acre.	Straw cwt. per Acre.	Total Pr'd'ce lb. per Acre.	Dr'ss'd Grain Bush. per Acre.	Straw cwt. per Acre.	Total Pr'd'ce lb. per Acre.	Roots tons per Acre.	Leav's tons per Acre.	Total tons per Acre.
A 1	Control	—	36.3	36.7	6613	10.8	8.7	1669	9.43	2.60	12.03
		1920	42.5	45.7	8129	27.9	17.2	3554	18.38	3.10	21.48
		1913	44.3	42.9	7921	27.4	16.1	3390	12.02	2.45	14.47
		1914	43.2	42.8	7812	25.8	14.7	3128	10.43	2.17	12.60
		1915	42.1	41.8	7685	29.3	18.0	3758	13.40	2.84	16.24
B 1	Cake fed dung, 16 tons	1920	44.8	46.3	8288	28.6	16.9	3519	21.74	3.73	25.47
		—	38.2	36.7	6831	11.7	10.5	2075	8.42	2.32	10.74
		1913	46.8	47.3	8550	28.8	15.9	3462	15.20	3.00	18.20
		1914	44.2	43.5	7974	29.8	16.7	3546	16.89	3.39	20.28
		1915	44.6	44.0	8024	29.6	17.1	3553	14.80	2.88	17.68
C 1	Shoddy, 308 lb.; Super. 292 lb.; Sulph. of Potash 110 lb. ...	1920	33.6	32.6	6071	11.4	9.0	1715	11.93	3.62	15.55
		1913	32.9	32.9	6097	14.3	9.8	1985	10.54	3.58	14.12
		—	36.5	33.5	6344	13.4	8.4	1756	13.66	3.65	17.31
		1914	34.9	36.6	6635	17.2	10.5	2194	12.62	3.33	15.95
		1919	37.5	37.2	6765	23.3	14.5	2996	14.57	3.50	18.07
D 1	Guano 352 lb.; Sulph. Amm. 44 lb.; Sulph. of Potash 86 lb. ...	1920	38.3	39.2	7119	14.9	10.0	1968	14.44	4.25	18.69
		1913	34.8	31.8	6041	12.9	8.4	1735	12.71	3.47	16.18
		1914	35.5	37.9	6839	17.1	10.4	2171	14.43	4.18	18.61
		—	37.2	41.2	7258	13.6	8.6	1809	9.61	2.99	12.60
		1919	37.4	38.5	7004	24.3	17.0	3412	5.80	2.22	8.02
E 1	Rape Dust 844 lb.; Super. 240 lb.; Sulph. of Potash 80 lb. ...	1920	38.1	38.2	7003	13.7	9.5	1911	13.33	4.14	17.47
		1913	37.1	40.3	7166	15.7	10.5	2162	14.05	3.13	17.18
		1914	34.3	34.7	6309	14.5	8.7	1881	14.17	3.42	17.59
		1919	34.4	37.3	6609	22.4	13.5	2871	10.90	2.78	13.68
		—	39.3	39.5	7207	13.7	11.0	2161	6.43	2.31	8.74
F 1	Control Super. 292 lb.; Sulph. Amm. 196 lb.; Sulph. of Potash 110 lb. ...	—	35.6	37.3	6703	10.8	8.4	1629	3.32	1.46	4.78
		1920	36.7	36.2	6675	12.3	8.9	1805	16.30	3.46	19.76
		1913	31.8	33.0	5995	11.7	8.1	1673	9.31	2.55	11.86
		1914	35.5	37.5	6751	12.4	8.2	1696	7.84	2.15	9.99
		1919	36.1	37.7	6788	23.9	16.3	3276	9.23	2.75	11.98
G 1	Bone Meal 160 lb.; Super. 110 lb.; Sulph. Amm. 188 lb. ...	1920	34.9	33.9	6321	14.8	9.6	1952	8.63	3.10	11.73
		1913	33.0	32.7	6025	16.5	9.9	2060	6.27	2.01	8.28
		—	34.6	35.2	6374	17.6	9.6	2118	3.60	1.11	4.71
		1914	37.5	36.8	6714	16.9	10.2	2131	6.00	1.74	7.74
		1919	36.0	37.7	6780	23.2	14.6	3022	7.12	2.31	9.43
H 1	Basic Slag 520 lb.; Super. 110 lb.; Sulph. Amm. 196 lb. ...	1920	41.6	37.4	7016	24.4	13.3	2867	15.77	3.58	19.35
		1913	42.3	41.1	7485	24.0	13.0	2816	11.48	2.87	14.35
		1914	39.6	40.6	7303	23.2	12.8	2741	11.48	2.85	14.33
		1919	40.6	37.0	6934	31.2	17.4	3750	10.72	2.58	13.30
		—	36.8	38.0	6837	19.8	11.3	2431	4.87	1.54	6.41

NOTES AS TO MANURES.

In 1919 a new system of manuring was begun. The manure for each plot (except of series A and B) was rationed at 40 lbs. Nitrogen, 100 lbs. Calcium Phosphate, and 50 lbs. Potash per acre. Each plot was supplied with as much of its particular manure (shoddy, guano, &c.) as possible without exceeding the receipt in any of the three rationed ingredients. Any deficit in either of these three was then made good by adding the necessary quantity of Sulphate of Amm., Superphosphate, or Sulphate of Potash. Series A and B left as before. No manure was applied in 1917 or 1918. For manures 1904-17 see Report for 1915-16-17.

Figures in italics denote unmanured plots. The yields on the plots to which the manure was applied in a given year are printed in heavy type.

RED CLOVER grown year after year on rich Garden Soil, Rothamsted Garden.

Hay, Dry Matter, and Nitrogen per Acre, 1913 to 1920.

Year.	No. of Cuttings.	As Hay.	Dry Matter.	Nitrogen.	Seed Sown.
		lbs.	lbs.	lbs.	
1913	2	4211	3509	98	1912, April, mended
1914	2	2041	1701	46	" " "
1915	1	1304	1087	26	" " "
1916	1	1724	1437	51	1916, April 21st, re-sown
1917	3	3351	2793	81	1917, April 23rd, mended
1918	2	2262	1885	50	1918, April 6th, re-sown
1919	2	898	748	22	1919, April 27th, mended
1920	3	4400	3667	114	1920, May 5th, mended
Averages:					
25 years, 1854—1878		7664	6387	179	
25 years, 1879—1903		3924	3270	101	
50 years, 1854—1903		5794	4829	140	
15 years, 1904—1918		2888	2407	70	

Wheat after Fallow (without Manure 1851, and since). Hoos Field, 1918, 1919, 1920.

	1918.	1919.	1920.	Average 61 years 1856-1916.
Dressed Grain (Yield—Bushels per Acre	15.3	11.8	9.4	15.6
Weight per Bushel—lbs.	61.7	59.9	62.8	59.5
Straw—cwt. per Acre	14.1	9.6	8.9	13.4
Total Produce—lbs. per Acre	2611	1848	1642	2477

DRESSED SEED EXPERIMENT, 1919. Barley. Little Hoos Field.

Description of Plot.	Dressed Grain.				Straw per Acre.		Total Produce per Acre.	
	Yield per Acre.		Weight per Bushel.		Single Strength.	Double Strength.	Single Strength.	Double Strength.
	Single Strength.	Double Strength.	Single Strength.	Double Strength.				
	Bushels.	Bushels.	lbs.	lbs.	cwt.	cwt.	lbs.	lbs.
Heavy Oil ...	23.5	20.0	54.0	54.5	13.2	11.8	2880	2580
	24.3	—	54.3	—	14.1	—	3055	—
Bone Oil ...	19.3	17.5	54.5	54.0	11.6	10.4	2465	2235
	24.5	—	54.5	—	14.5	—	3110	—
Creosote ...	21.5	11.3	53.3	53.0	12.3	8.8	2695	1750
	22.6	—	53.0	—	14.1	—	2920	—
Acetone Tar	21.1	12.5	54.5	53.0	12.5	9.1	2695	1770
	19.9	—	52.5	—	12.9	—	2605	—
Gas Tar ...	23.0	14.1	53.0	54.0	13.2	7.9	2810	1743
	13.1	—	53.5	—	12.9	—	2260	—
	22.0	14.7	55.0	53.0	12.9	9.1	2810	1885
Control ...	18.9	—	54.0	—	10.0	—	2300	—
	23.7	—	54.0	—	13.8	—	2935	—
	18.4	—	54.5	—	11.8	—	2460	—

Single Strength represents 1 pint of dressing to 4 bushels of seed.

TOP DRESSING EXPERIMENT. Oats (Grey Winter). Great Harpenden Field, 1919.

Manures per Acre.	Dressed Grain.						Straw per Acre.			Total Produce per Acre.		
	Yield per Acre.			Weight per Bushel.			1st Expt.	2nd Expt.	3rd Expt.	1st Expt.	2nd Expt.	3rd Expt.
	1st Expt.	2nd Expt.	3rd Expt.	1st Expt.	2nd Expt.	3rd Expt.						
	Bush.	Bush.	Bush.	lbs.	lbs.	lbs.	cwt.	cwt.	cwt.	lbs.	lbs.	lbs.
Sulphate Amm. 1½ cwts., Super 3 cwts. ...	79.9	62.6	62.3	42.0	42.8	41.8	40.4	34.2	32.4	8206	6850	6675
Nitrate Soda 2 cwts., Super. 3 cwts. ...	71.9	68.9	67.6	42.8	41.9	42.1	41.7	38.0	37.5	8169	7500	7284
Nitrate Amm. ¾ cwt., Super. 3 cwts. ...	74.1	68.9	57.4	42.5	42.4	44.0	37.7	34.4	32.6	7700	7119	6544
Nitrolim 2 cwts., Super. 3 cwts. ...	67.1	58.4	60.3	42.0	42.6	42.0	33.9	29.0	30.1	6900	6069	6706
Guandine Nitrate 84 lbs., Super. 3 cwts. ...	75.7	—	63.1	41.4	—	42.9	37.3	—	32.6	7547	—	6678
Guandine Sulphate 94 lbs., Super. 3 cwts. ...	73.3	56.7	53.0	41.3	45.0	43.5	32.4	27.7	27.0	6900	5972	5706
Guandine Carb. 75 lbs., Super. 3 cwts. ...	68.2	61.5	52.5	42.1	42.8	43.3	30.6	28.4	26.6	6638	6200	5547
Super 3 cwts. ...	64.1	49.0	—	42.0	42.9	—	30.4	25.5	—	6388	5269	—
(	68.1	49.7	48.6	42.9	44.3	43.0	33.3	24.3	26.3	6981	5238	5444
Control ...	58.9	47.8	47.4	43.6	41.6	43.0	28.4	23.4	23.7	6056	4781	4975
(	—	48.1	39.0	—	46.8	42.5	—	24.3	22.8	—	5256	4637

Wheat (Red Standard). Great Harpenden Field, 1920.

Date of Applying Dressing.	Dressed Grain.				Straw per Acre.		Total Produce per Acre.	
	Yield per Acre.		Weight per Bush		Single Dressing.	Double Dressing.	Single Dressing.	Double Dressing.
	Single Dressing.	Double Dressing.	Single Dressing.	Double Dressing.				
	Bush.	Bush.	lbs.	lbs.	cwt.	cwt.	lbs.	lbs.
Early: Feb. 10th ...	28.7	35.9	63.6	63.6	26.9	35.9	4960	6456
Medium: March 16th ...	29.8	—	63.8	—	31.1	—	5522	—
Late: May 10th ...	31.6	32.6	62.9	62.7	33.6	36.9	6020	6490
Control ...	28.9	—	63.9	—	24.2	—	4683	—

Single dressing represents 100 lbs. Sulphate Amm. and 100 lbs Super.

SUBSOILING EXPERIMENT. Potatoes (King Edward). West Barnfield, 1918.

Treatment of Plots.	Yield per Acre.	
	East. cwt.	West. cwt.
Subsoiled in 1914 ...	75.1	127.3
Not Subsoiled ...	90.7	133.7

VARIETY EXPERIMENT. Wheat. Great Harpenden Field, 1920.

Variety.	Dressed Grain.		Straw per Acre.	Total Produce per Acre.
	Yield per Acre.	Weight per Bush		
	Bushels.	lbs.	cwt.	lbs.
Red Standard ...	26.2	63.6	32.2	5475
Yeoman ...	27.0	63.3	29.7	5333
Fenman ...	28.6	62.8	34.3	5845

FLUE DUST EXPERIMENTS. Mangolds. Stackyard Field, 1918.

Plot.	Manures per Acre.	Weight of Roots per Acre. Tons.	"Best Rows." [†]	
			Number of Rows.	Weight per Acre. Tons.
10	Superphosphate 4 cwt., Salt 2 cwt. ...	16.7	8	19.6
12A		16.9	7	25.1
14		17.9	5	21.9
1	Superphosphate 4 cwt., Salt 2 cwt., Sulphate Ammonia 2 cwt. ...	19.3	5	26.8
9		17.9	9	20.9
11	Superphosphate 4 cwt., Salt 2 cwt., Nitrate Ammonia 145 lbs. ...	20.7	8	25.2
15		25.9	all	25.9
2	Super. 4 cwt., Salt 2 cwt., Sulphate Amm. 2 cwt., Flue Dust, grade 1, 3.1 cwt. ...	14.2	4	22.2
3	Ditto, Flue Dust, grade 2, 7.5 cwt. ...	11.9	2	23.6
4	Ditto, Flue Dust, grade 3, 5 cwt. ...	15.5	4	21.4
5	Ditto, Extracted Flue Dust, 6.5 cwt. ...	19.9	all	19.9
6	Ditto, Sulphate of Potash, 1 cwt. ...	18.6	7	20.2
7	Ditto, Flue Dust, grade 2, 7.5 cwt. (Inter- mediate application) ...	15.5	4	28.9
8	Ditto, Flue Dust, grade 2, 7.5 cwt. (late application) ...	17.3	5	23.1
12	Super. 4 cwt., Salt 2 cwt., Dried Sewage Sludge 2 tons ...	20.2	8	24.4
13	Super. 4 cwt., Salt 2 cwt., Cordite 12 cwt.	21.5	7	23.9
16	No Artificials and no Chalk ...	18.3	10	21.3
17		18.4	9	19.9
19	No Chalk, Manure as for farm ...	18.3	7	20.2
20	Chalked, but no Artificials ...	15.8	all	15.8
21		15.8	all	15.8

[†] There were gaps in these plots. "Best Rows" are rows of full length with all plants growing.

Potatoes. West Barnfield, 1918.

Plot.	Manures per Acre.	Weight per Acre Tons.
1	Superphosphate 4 cwt., Sulphate of Ammonia 2 cwt. ...	7.5
2	Super. 4 cwt., Sulphate Amm. 2 cwt., Flue Dust, grade 1, 20.7 cwt. ...	7.5
3	Ditto ditto Flue Dust, grade 2, 7.4 cwt.	8.4
4	Ditto ditto Flue Dust, grade 3, 3.7 cwt.	8.2
5	Ditto ditto Flue Dust extracted, 6.4 cwt.	8.3
6	Ditto ditto Sulphate of Potash, 1 cwt.	8.4
7	Ditto ditto Flue Dust, grade 2, 7.4 cwt. (Intermediate application)	8.4
8	Ditto ditto Flue Dust, grade 2, 7 cwt. (Late application)	9.0
9	Ditto ditto ...	8.8
10	Ditto ...	8.7
11	Ditto, Nitrate of Amm. 145 lbs. ...	8.9
12	Ditto, Sewage Sludge, 2 tons ...	8.6
12A	Ditto ...	7.8
13	Ditto ...	7.3
14	Ditto, Nitrate Amm. 145 lbs. ...	8.5
15	No Artificials ...	7.2

Flue Dust, grade 1, contains 2.21 p.c. Potash. Flue Dust, grade 3, contains 8.90 p.c. Potash.
" 2, " 5.85 " extracted, " 7.37 "

Sulphate of Potash contains 50.24 p.c. Potash.
The quantities applied were calculated on the basis of 1 cwt. Sulphate of Potash
(49 p.c. Potash) per Acre.

NOTE.—All Plots received a dressing of Dung at the rate of 10 tons per acre.

SLUDGE EXPERIMENTS, 1920.

Hay. Great Field Pasture, 1920.

Plot.	Manures per Acre.	Yield per Acre.
1 North	Wet Sludge, 61·7 cwt.	cwt. 29·3
2	Control	22·0
3 South	Wet Sludge, 61·7 cwt.	22·6
4 North	Sulphate of Ammonia, 1½ cwt.	35·4
5	Control	22·2
6 South	Sulphate of Ammonia, 1½ cwt.	31·0
7 North	Slag, 10 cwt.	25·0
8	Control	21·2
9 South	Slag, 10 cwt.	26·3
10 North	Superphosphate, 6 cwt.	26·3
11	Control	22·9
12 South	Superphosphate, 6 cwt.	22·7
13 North	Nitrate of Ammonia, 114 lbs.	39·6
14	Control	24·9
15 South	Nitrate of Ammonia, 114 lbs.	36·5
16	Nitrolim, 234 lbs.	34·6
17	Control	26·6
18	Nitrolim, 234 lbs.	30·1

Potatoes. Long Hoos Field, 1920.

1	} Activated Sewage Sludge, 13·3 tons; Super., 6 cwt.	tons
4		11·8
3	} Nitrate of Ammonia, 1 cwt.	8·8
6		10·8
2	} Farmyard Dung, 15 tons; Super., 6 cwt.; Nitrate of Ammonia, 1 cwt.	9·6
5		7·8
7	} Control; Super., 6 cwt.; Nitrate of Ammonia, 1 cwt.	8·3
8		8·9
		7·9

Barley. Long Hoos Field, 1920.

Plot.	Manures per Acre.	Dressed Grain.		Straw per Acre.	Total Produce per Acre.
		Yield per Acre.	Weight per Bushel.		
		Bushels	lbs.		
1	} Activated Sewage Sludge, 2·7 tons	36·2	55·5	20·4	4363
4		26·3	56·5	21·1	3897
7	} Sulphate of Ammonia, 1·45 cwt.	46·3	55·8	28·7	5894
2		45·1	56·3	25·1	5444
5	} Control	38·8	56·3	29·1	5513
3		37·0	55·8	21·8	4557
6	} Control	36·5	55·5	23·1	4701
8		39·3	55·5	24·7	5057

METHOD OF SOWING EXPERIMENT. Wheat. Little Knott Wood, 1918.

Plot.	Treatment.	Dressed Grain.		Straw per Acre.	Total Produce per Acre.
		Yield per Acre.	Weight per Bushel.		
		Bushels	lbs.	cwts.	lbs.
1	Wheat ploughed in after being broadcasted	42.7	61.5	42.5	7543
2	Wheat ploughed in after being drilled	38.6	62.3	40.0	7006
3	Land ploughed, then seed drilled ...	41.9	64.2	43.6	7869

These plots were top dressed on March 12th with 1 1/4 cwt. Super. and 1 cwt. Sulphate Amm. per Acre.

CHALKING EXPERIMENT. Barley. Stackyard Field, 1919.

Description of Plot.	Dressed Grain.		Straw per Acre.	Total Produce per Acre.
	Yield per Acre.	Weight per Bushel.		
	Bushels	lbs.	cwts.	lbs.
1. Chalked, Autumn, 1912	35.6	55.0	18.7	4150
2. " " " " " " " " " "	34.8	54.9	18.9	4123
3. } Unchalked {	28.9	54.8	15.9	3434
4. } " " " " " " " " " " {	33.9	55.0	17.0	3850

STRAW EXPERIMENTS.

Treatment.	Yield per Acre in Tons.	
	Arran Chief	King Edward.
Potatoes. West Barnfield, 1918.		
Raw Straw	7.3	4.9
	7.3	—
Treated Straw	7.3	5.2
	7.4	—
Control	6.8	4.5
	7.0	—
Potatoes. New Zealand Field, 1919.		
Raw Straw	4.7	—
	4.6	—
"Nitrogen" Treated Straw	6.0	—
	6.3	—
"Water" Treated Straw	5.7	—
	5.4	—
Control	6.6	—
	5.9	—

NOTE.—Manures as follows were applied to the West Barnfield potato plots viz., 2 1/2 cwt. Super., 1 1/2 cwt. Sulphate of Amm., and 1/2 bush. Bone Meal per acre.

PROFESSOR BLACKMAN'S
ELECTRO CULTURE EXPERIMENTS, 1919-20.

Clover. Foster's Field.

Description of Plots.	1919			1920.
	1st Crop. Weight per Acre.	2nd Crop. Weight per Acre.	1st and 2nd Crops. Weight per Acre.	1st Crop. Weight per Acre.
Electro Plot ...	cwts. 34.8	cwts. 17.1	cwts. 51.9	cwts. 23.9
Control 1* ...	23.1	14.0	37.1	24.1
Control 2* ...	36.5	—	48.1	23.0
Control 3 ...	—	11.0	—	—

* Control 2 could not be used for second crop of 1919; Control 3 was therefore added. Control 1 is the same for both 1919 crops, but was wired off for the second crop. Controls 1 and 2 both different in 1920 from 1919.
NOTE.—2nd crop 1920 was ploughed in.

WHEAT AND BARLEY.

Description of Plots.	Dressed Grain.		Straw. Yield per Acre. cwts.	Total Produce. Yield per Acre. lbs.	
	Yield per Acre. Bushels.	Weight per Bushel. lbs.			
Winter Wheat. Great Knott Wood Field, 1919.					
Electro Plots ...	{ E 1 E 2	21.2 21.9	60.4 61.0	15.6 18.1	3210 3596
Control Plots ...	{ C 1 C 2	13.9 16.8	61.9 62.3	11.6 13.5	2338 2833
Cage Plot ...	...	8.6	60.5	12.0	2108
Spring Wheat. Great Knott Wood Field, 1919.					
Electro Plots ...	{ E 3 E 4	8.2 8.2	56.0 56.2	10.7 11.3	1845 1988
Control Plots ...	{ C 3 C 4 C 5	10.6 8.7 6.9	56.6 55.0 55.1	10.3 11.4 9.8	1951 1978 1676
Wheat (Yeoman). Foster's Field, 1920.					
Electro Plots ...	{ E 1 E 2	18.8 18.4	62.2 62.2	19.0 19.7	3448 3536
Control Plots ...	{ C 1 C 2	20.4 18.2	62.5 62.1	20.5 17.4	3697 3245
Barley. Foster's Field, 1918.					
Electro Plots ...	{ E 1 E 2 E 3	44.7 47.4 46.4	51.5 54.0 53.4	22.4 25.1 24.4	4890 5458 5284
Control Plots ...	{ C 1 C 2 C 3	36.4 52.7 36.3	52.6 53.5 54.0	22.1 29.1 22.3	4456 6162 4525
Cage Plot ...	C 4	44.0	54.9	26.3	5453
Barley. Great Knott Wood Field, 1920.					
Electro Plots ...	{ E 3 E 4	31.7 33.0	53.1 53.2	17.3 18.5	3672 3889
Control Plots ...	{ C 3 C 4	29.5 25.2	53.4 53.3	16.0 12.5	3410 2779

SOIL STERILISING EXPERIMENT.

Wheat after Barley. Long Hoos Field, 1918.

Plot.	Treatment.	Dressed Grain.		Straw per Acre.	Total Produce per Acre.
		Yield per Acre.	Weight per Bushel.		
		Bushels.	lbs.	cwts.	lbs.
1	Cresylic Acid	35.0	63.5	37.9	6745
2	Control	27.7	63.0	30.4	5387
3	Naphthaline	34.5	62.5	38.1	6645

NOTE.—Dressings on sawdust applied November 2nd, 1917, on Barley Stubble and ploughed in at once. These plots were top dressed as farm, viz. 1 cwt. Sulph. Amm., 1½ cwt. Super. per acre.

MISCELLANEOUS EXPERIMENTS.

Barley. Hoos Field. Leguminous Strips, 1918, 1919, 1920.

Description of Plot.	Manuring per Acre.	1918.				1919.				1920.			
		Dressed Grain.		Straw per Acre.	Total Produce per Acre.	Dressed Grain.		Straw per Acre.	Total Produce per Acre.	Dressed Grain.		Straw per Acre.	Total Produce per Acre.
		Bush. per Acre.	Weight per Bushel lbs.			Bush. per Acre.	Weight per Bushel lbs.			Bush. per Acre.	Weight per Bushel lbs.		
After Lucerne ...	Sulphate Amm. 1½ cwt. ...	20.1	55.3	10.7	2340	15.8	53.1	7.9	1790	27.3	52.8	20.5	3837
	S. Amm. 1½ cwt. Super. 3 cwt.	27.4	54.8	11.1	2777	18.4	54.1	8.0	1939	46.3	53.2	20.0	4799
	Sulphate Amm. 1½ cwt. ...	19.4	54.8	9.6	2170	12.5	53.3	6.9	1493	16.3	53.1	15.9	2719
After Red Clover	S. Amm. 1½ cwt.; Super. 3 cwt.	22.9	54.4	9.1	2282	16.1	54.6	6.6	1651	33.5	52.3	16.1	3630
	Sulphate Amm. 1½ cwt. ...	17.5	54.2	8.5	1930	10.6	53.6	6.7	1375	15.5	53.4	15.8	2657
After Alsike ...	S. Amm. 1½ cwt.; Super. 3 cwt.	21.4	53.8	8.7	2185	15.4	54.0	6.8	1621	38.0	52.1	18.6	4116

Leguminous crops ploughed in November, 1911. For crop yields, see previous Reports. In 1915 the land was fallow; in 1916 and 1917, barley with clover: no separate weighings were kept, however.

Mangolds. Long Hoos Field, 1919.

Plot.	Description of Plot.	Manuring per Acre.	Weight of Roots per Acre. Tons.
A	Bouted	20 tons of Dung, 3 cwt. Super., 1½ cwt. Sulphate Ammonia, applied on May 23 and a further 2 cwt. Sulphate Ammonia, applied July 28 ...	11.0
B	Flat		6.5
C	Bouted		9.0

Hoos Field. Barley sown with Clover, 1920.

(Formerly Barley after Alsike, p. 84). Clover cut with Barley and weighed

Plot.	Manures per Acre.	Clover.	Barley.	Total
		Yield per Acre.	Yield per Acre.	Produce per Acre.
		cwts.	cwts.	cwts.
1	8 cwt. Slag, 10 cwt. Lime	6.7	31.7	38.4
2	5 cwt. Super., 10 cwt. Lime, 14 tons Dung	15.2	31.2	46.4
3	10 cwt. Lime	4.9	27.7	32.6
4	5 cwt. Super., 1.5 cwt. Sulph. Potash, 10 cwt. Lime	9.8	28.1	37.9
5	5 cwt. Super., 10 cwt. Lime	7.1	28.6	35.7
6	10 cwt. Lime	4.5	30.4	34.8
7	10 cwt. Lime, 14 tons Farmyard Dung ...	8.5	41.5	50.0
8	8 cwt. Slag	5.4	21.9	27.3
9	5 cwt. Super., 14 tons Farmyard Dung ...	14.7	21.9	36.6
10	Control	3.6	21.9	25.5
11	5 cwt. Super., 1.5 cwt. Sulph. Potash ...	12.5	24.1	36.6
12	5 cwt. Super.	9.4	24.1	33.5
13	Control	6.3	22.3	28.6
14	14 tons Farmyard Dung	13.0	27.2	40.2
15	10 cwt. Lime, 14 tons Horse Manure ...	11.2	14.7	25.9
16	Control	4.9	14.3	19.2
17	14 tons Horse Manure	11.2	13.8	25.0
18	5 cwt. Super.	4.0	22.8	26.8
19	10 cwt. Lime, 14 tons Cattle Manure ...	8.5	29.5	38.0
20	Control	4.5	26.3	30.8
21	14 tons Cattle Manure	7.6	30.4	38.0

Manures sown March 13th, 1920. Horse, Cattle and Farmyard (Mixed) Manure put on Feb. 20th and 21st, 1920. Barley Seed sown March 19th, 1920. Clover Seed drilled between Barley rows, May 1st, 1920.

Wheat after Clover in 1917. Little Hoos Field, 1918.

Plot.	Manures per Acre.	Dressed Grain.	Straw per Acre.	Total Produce
		Yield per Acre. lbs.		per Acre. lbs.
			cwts.	
1	Control	2195	34.9	6323
6		2325	38.7	6937
3	Superphosphate 2 cwt.	2493	39.5	7190
8		2197	39.3	6905
2	Super. 2 cwt., Sulphate Amm. 1 cwt. ...	2630	45.8	8058
5		2585	42.1	7655
4	Super. 2 cwt., Nitrate Amm. 72 lbs. ...	2823	44.2	8000
7		2400	44.0	7710