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Memoranda of the Field Experiments at Rothamsted, May 1873

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Experiments on Sugar Beet; Barn Field

Rothamsted Research

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BARN FIELD. EXPERIMENTS ON SUGAR BEET,

To BE GROWN YEAR AFTER YEAR ON THE SAME LAND, WITHOUT MANURE, AND WITH DIFFERENT DESCRIPTIONS OF MANURE, COMMENCING 1871.

Previous Cropping:—1843-'48 (6 Seasons), experiments on Norfolk White Turnips, with different descriptions of Manure.

1849-'52 (4 Seasons), experiments on Swede Turnips, with different descriptions of Manure.

1853-'55 (3 Seasons), Barley without Manure (with a view as far as possible to equalise the condition of the Plots).

1856-'70 (15 Seasons), experiments on Swede Turnips, with different descriptions of Manure, in which the arrangement of the Plots was the same, and that of the Manures very similar—in fact, exactly the same during the last 10 years as in the first year of Sugar Beet, excepting that, during those 10 years, the Alkalies were omitted for the Swedes. For the second and subsequent years of Sugar Beet, slight alterations in the Manures were made, as will be seen below.

Area under experiment about 8 acres. The experiments are arranged as under, in 5 Series, each of which comprises 8 Plots.

Plots.	SERIES 1.		FIRST SEASON, 1871.		SECOND SEASON, 1872.		THIRD SEASON, 1873; Manures, &c., exactly as for 1872.	
	Roots.	Leaves.	Tons. cwt.	Tons. cwt.	Tons. cwt.	Tons. cwt.	Tons. cwt.	Tons. cwt.
1	1 acre (about)	" = (about)	0·40 Hectare .. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..
1 lb. (pound avoird.)	(about)	1 lb. Prussian Morgen.	or 0·91 Zollverein Pfund.	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..
1 cwt. (hundredweight) = (about)	51-0 Kilogrammes .. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..
1 ton	(about) 1016-0 Kilogrammes .. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..
1 lb. per acre	(about) 1-12 Kilogrammes per Hectare or 0·57 Zoll. Pf. per Pr. Morgen.	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..
1 cwt. per acre	(about) 125·5 Kilogrammes per Hectare or 0·64 Centner per Pr. Morgen.	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..
1 ton per acre	(about) 2510·0 Kilogrammes per Hectare or 12·82 Centner per Pr. Morgen.	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..	.. .. ..

Plots.	SERIES 2.		SERIES 3.		SERIES 4.		SERIES 5.	
	Each Plot as Series 1,							
	Cross-dressed							
	with 2000 lbs. Rape-cake,							
	400 lbs. "Ammonia-salts."							

Plots.	PRODUCE PER ACRE (Roots trimmed as for feeding, not as for Sugar making).		PRODUCE PER ACRE (Roots trimmed as for feeding, not as for Sugar making).		PRODUCE PER ACRE (Roots trimmed as for feeding, not as for Sugar making).		PRODUCE PER ACRE (Roots trimmed as for feeding, not as for Sugar making).	
	Roots.	Leaves.	Roots.	Leaves.	Roots.	Leaves.	Roots.	Leaves.
1	Farmyard Manure (14 tons)	3 cwt.	27 cwt.	13 cwt.	22 cwt.	4 cwt.	26 cwt.	4 cwt.
2	Farmyard Manure (14 tons), and 31 cwt. Superphosphate of Lime (C)	3 cwt.	25 cwt.	16 cwt.	21 cwt.	6 cwt.	25 cwt.	6 cwt.
3	Without Manure (for 30 years)	7 cwt.	11 cwt.	2 cwt.	15 cwt.	6 cwt.	18 cwt.	5 cwt.
4	{ 31 cwt. Superphosphate, 300 lbs. Sulphate Soda, and	7 cwt.	11 cwt.	1 cwt.	22 cwt.	3 cwt.	15 cwt.	4 cwt.
5	31 cwt. Sulphate Magnesia	5 cwt.	12 cwt.	1 cwt.	17 cwt.	8 cwt.	15 cwt.	3 cwt.
6	31 cwt. Superphosphate, and 300 lbs. Sulph. Potass. and 361 lbs. Ammonia-salts (C)	5 cwt.	18 cwt.	1 cwt.	21 cwt.	5 cwt.	18 cwt.	4 cwt.
7	31 cwt. Superphosphate, and 300 lbs. Sulph. Potass. and part Super-phosphate	7 cwt.	10 cwt.	1 cwt.	20 cwt.	18 cwt.	21 cwt.	5 cwt.
8	Without Manure 1853 and since; previously part Unmanured, and part Super-phosphate	7 cwt.	13 cwt.	1 cwt.	31 cwt.	16 cwt.	15 cwt.	4 cwt.

Plots.	PRODUCE PER ACRE (Roots trimmed as for feeding, not as for Sugar making).		PRODUCE PER ACRE (Roots trimmed as for feeding, not as for Sugar making).		PRODUCE PER ACRE (Roots trimmed as for feeding, not as for Sugar making).		PRODUCE PER ACRE (Roots trimmed as for feeding, not as for Sugar making).	
	Roots.	Leaves.	Roots.	Leaves.	Roots.	Leaves.	Roots.	Leaves.
1	Farmyard Manure (14 tons)	4 cwt.	23 cwt.	9 cwt.	9 cwt.	8 cwt.	26 cwt.	8 cwt.
2	Farmyard Manure (14 tons), and 31 cwt. Superphosphate of Lime (C)	4 cwt.	24 cwt.	6 cwt.	22 cwt.	0 cwt.	25 cwt.	5 cwt.
3	Without Manure (for 30 years)	16 cwt.	318 cwt.	21 cwt.	17 cwt.	8 cwt.	20 cwt.	3 cwt.
4	{ 31 cwt. Superphosphate, 500 lbs. Sulphate Potass., 200 lbs. Chloride Sodium	17 cwt.	113 cwt.	6 cwt.	15 cwt.	3 cwt.	18 cwt.	3 cwt.
5	31 cwt. Superphosphate, and 200 lbs Sulphate Magnesia	6 cwt.	14 cwt.	1 cwt.	20 cwt.	2 cwt.	13 cwt.	4 cwt.
6	31 cwt. Superphosphate, and 500 lbs Sulph. Potass. and 361 lbs. Ammonia-salts (C)	6 cwt.	17 cwt.	1 cwt.	16 cwt.	5 cwt.	14 cwt.	4 cwt.
7	31 cwt. Superphosphate, and 500 lbs Sulph. Potass. and part Super-phosphate	5 cwt.	15 cwt.	1 cwt.	17 cwt.	6 cwt.	19 cwt.	4 cwt.
8	Without Manure 1853 and since; previously part Unmanured, and part Super-phosphate	5 cwt.	15 cwt.	1 cwt.	15 cwt.	6 cwt.	19 cwt.	4 cwt.

(C) " Superphosphate of Lime "—in all cases made from 200 lbs. Bone-ash, 150 lbs. Sulphuric Acid sp. gr. 1·7 (and water).
 (?) " Ammonia-salts "—in each case equal parts Sulphate and Muritate of Ammonia of Commerce.