ROTHAMSTED RESEARCH

Guide to the Experimental Plots - 1913

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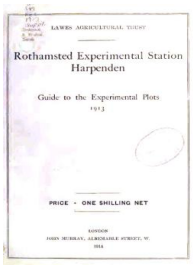

Little Hoos Field - Residual Value of Manures

Rothamsted Research

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HOOS FIELD

Wheat after Fallow

The two half-acre plots in Hoos field are never manured, but every year one carries a wheat crop and the other is given a bare summer fallow, the treatment alternating, so that every year one plot is carrying a wheat crop following a bare fallow. By comparing the results obtained with the yield of the unmanured plot growing wheat continuously, the benefit of the bare fallow can be estimated. (See Table XXI.)

LITTLE HOOS FIELD

Residual Value of Manures

The object of the experiments in this field is to test the residual value of certain typical manures, *i.e.*, the value of the residues left in the soil after one or more crops have been grown since the time of their application. To eliminate the effect of season, the result yielded by the residue is in all cases compared with that of a new application of the same manure, as well as with a continuously unmanured check plot.

The ordinary dung is made by feeding beasts with hay and roots only, the beasts making the cake-fed dung alongside receive also an ordinary allowance of linseed and cotton cake. The two lots of dung are then laid up in heaps for a short time, and weighed out immediately before applying.

Table XXII.—*General Dressings of Mineral Manure on Series A to E, and of Nitrogenous Dressings on Series F to H.*

(Quantities per acre.)

	Series A to E.		Series F, G, H.
1904	3 cwt. Superphosphate.	1904	1 cwt. Sulphate Ammonia.
1905	...	1905	1 cwt. Sulphate Ammonia.
1906	3 cwt. Sulphate Potash.	1906	2 cwt. Sulphate Ammonia. 3 cwt. Sulphate Potash.
1907	3 cwt. Superphosphate.	1907	1 cwt. Sulphate Ammonia.
1908	3 cwt. Superphosphate.	1908	1 cwt. Sulphate Ammonia.
1909	3 cwt. Superphosphate.	1909	1 cwt. Sulphate Ammonia.
1910	...	1910	1 cwt. Sulphate Ammonia.
1911	3 cwt. Superphosphate. 200 lb. Sulphate Potash.	1911	1 cwt. Sulphate Ammonia. 200 lb. Sulphate Potash.
1912	...	1912	1 cwt. Nitrate Soda.

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H.—*Little Hoos Field. Plan of Rotation Plots arranged to test the Residual Value of various Manures—one, two, three, and four years after their application.*

	5	4	3	2	1
A	Dung (ordinary) 16 tons per acre 1907, '11, '15	Dung (ordinary) 16 tons per acre 1906, '10, '14	Dung (ordinary) 16 tons per acre 1905, '09, '13	(1) Dung (ordinary) 16 tons per acre 1904, '08, '12	
B	Dung (Cake-fed) 16 tons per acre 1907, '11, '15	Dung (Cake-fed) 16 tons per acre 1906, '10, '14	Dung (Cake-fed) 16 tons per acre 1905, '09, '13		(1) Dung (Cake-fed) 16 tons per acre 1904, '08, '12
C (2)	Shoddy 1 ton per acre 1907, '11, '15	Shoddy 1 ton per acre 1906, '10, '14		Shoddy 1 ton per acre 1905, '09, '13	Shoddy 1 ton per acre 1904, '08, '12
D (2)	Guano 8 cwt per acre 1907, '11, '15		Guano 8 cwt per acre 1906, '10, '14	Guano 8 cwt per acre 1905, '09, '13	Guano 8 cwt per acre 1904, '08, '12
E (2)		Rape-cake 10 cwt per acre 1907, '11, '15	Rape-cake 10 cwt per acre 1906, '10, '14	Rape-cake 10 cwt per acre 1905, '09, '13	Rape-cake 10 cwt per acre 1904, '08, '12
F	Superphosphate 600 lb. per acre 1907, '11, '15	Superphosphate 600 lb per acre 1906, '10, '14	Superphosphate 600 lb per acre 1905, '09, '13	Superphosphate 600 lb. per acre 1904, '08, '12	
G	Bone Meal 430 lb. per acre 1907, '11, '15	Bone Meal 430 lb. per acre 1906, '10, '14		Bone Meal 430 lb per acre 1905, '09, '13	Bone Meal 430 lb. per acre 1904, '08, '12
H		Basic Slag 600 lb. per acre 1907, '11, '15	Basic Slag 600 lb. per acre 1906, '10, '14	Basic Slag 600 lb. per acre 1905, '09, '13	Basic Slag 600 lb. per acre 1904, '08, '12

Adjoins Hoos Field.

Each Plot has received Superphosphate and Sulphate Potash as set out in Table XXII.

Each Plot has received both Nitrogenous and Mineral Manures as set out in Table XXII.

Adjoins Broadbalk Field. Area of each plot, $\frac{1}{8}$th acre.

Series A deals with the residual effects of Ordinary Dung.
,, B ,, ,, ,, Cake-fed Dung.
,, C ,, ,, ,, Shoddy.
,, D ,, ,, ,, Guano.
,, E ,, ,, ,, Rape Cake.
,, F ,, ,, ,, Superphosphate.
,, G ,, ,, ,, Bone-Meal.
,, H ,, ,, ,, Basic Slag.

In each series the manure is applied to one plot in 1904 and each successive fourth year, to another plot in 1905 and each successive fourth year, to a third plot in 1906 and each successive fourth year, and to a fourth plot in 1907 and each successive fourth year.

All the plots in the Series A to E, which deal with Nitrogenous Manures, receive, as necessary, equal amounts of Phosphates and Potash. Similarly, all the plots in the Series F, G, H, dealing with Phosphatic Manures, receive equal dressings of Nitrogenous or Potassic Manures as required.

(1) In 1912 only 10 tons 8 cwt. per acre of ordinary and cake-fed Dung respectively was applied, instead of 16 tons as in previous years.

(2) In 1908 and since, the Nitrogenous Manures applied to the plots of Series C, D, and E have been as follows—

Series C. Shoddy, 957 lb. = 50 lb. N. per acre.
,, D. Peruvian Guano, 777 lb. = 50 lb. N. ,,
,, E. Rape Cake, 1036 lb. = 50 lb. N. ,,

Check plots receiving in Series A to E no Nitrogen throughout, Series F to H, no Phosphates throughout.

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TABLE XXIII.—*Total Produce, Grain and Straw, or Roots and Leaves, per acre.*

Series and Plot.	Manuring.	Swedes, 1904.	Barley, 1905.	Mangolds, 1906.	Spring Wheat, 1907.	Swedes, 1908.	Barley, 1909.	Wheat, 1910.	Mangolds, 1911.	Wheat, 1912.*
		Tons.	Lb.	Tons.	Lb.	Tons.	Lb.	Lb.	Tons.	Bush.
A 1	Unmanured	10·3	2323	17·1	3650	14·0	3792	2270	11·6	19·4
2	Dung, ordinary (1904, '8, '12)	**13·1**	4649	18·2	4673	**19·1**	5128	2572	13·9	**34·3**
3	,, ,, (1905 & '9) .	8·8	**3501**	17·5	5393	14·5	**5544**	2681	14·1	26·9
4	,, ,, (1906 & '10)	8·8	2269	**18·2**	5471	15·5	4057	**2406**	12·5	29·2
5	,, ,, (1907 & '11)	9·8	2402	14·9	**6908**	17·3	4581	2358	**15·8**	26·8
B 1	Dung, cake-fed (1904, '8, '12)	**15·7**	4177	19·4	4319	**22 4**	5362	2386	14·1	**35·6**
2	Unmanured	10·0	2417	16·2	4025	14·3	3862	2261	12·0	21·8
3	Dung, cake-fed (1905 & '9) .	9·5	**5530**	18·5	5497	14·2	**6641**	2921	14·2	29·4
4	,, ,, (1906 & '10)	11·4	2772	**25·6**	6489	16·9	4400	**3502**	14·4	26·5
5	,, ,, (1907 & '11)	9·4	2649	14·4	**9407**	19·0	4298	2369	**17·1**	31·4
C 1	Shoddy (1904, '8, & '12) .	**14·7**	3656	21·0	4667	**19·7**	3969	2295	11·4	**28·4**
2	,, (1905 & '9) . .	11·1	**4363**	23·6	4550	16·3	**4558**	2387	11·6	26·1
3	Unmanured	10·6	2588	17·7	4334	15·1	3850	2561	11·7	24·2
4	Shoddy (1906 & '10) . .	10·7	2512	**24·2**	6231	19·1	4466	**3461**	14·0	30·4
5	,, (1907 & '11) . .	10·3	2615	16·9	**7495**	22·2	5448	2560	**14·7**	29·8
D 1	Guano (1904, '8, & '12) .	**14·6**	2550	20·1	4056	**20·9**	3608	1742	10·5	**28·8**
2	,, (1905 & '9) . .	11·0	**5176**	19·7	4165	15·3	**6834**	2114	11·5	24·1
3	,, (1906 & '10) . .	10·9	2857	**25·6**	4846	15·9	4053	**3392**	11·1	22·5
4	Unmanured . . .	10·6	2985	18·7	4618	17·4	4510	2739	11·8	26·9
5	Guano (1907 & '11) . .	10·6	2680	17·4	**7375**	15·7	4014	2374	**14·2**	26·3
E 1	Rape Cake (1904, '8, & '12).	**14·1**	2674	17·8	3887	**19·7**	3750	2180	10·7	**27·7**
2	,, (1905 & '9). .	11·2	**4185**	17·9	4326	15·1	**5203**	2242	11·7	22·3
3	,, (1906 & '10) .	9·5	2645	**22·7**	4584	14·5	3866	**3486**	11·5	22·2
4	,, (1907 & '11) .	10·5	2734	19·4	**6619**	15·2	4661	2516	**14·5**	25·1
5	Unmanured . . .	10·8	2769	19·5	4527	14·7	4155	2784	12·7	21·1
F 1	Unmanured	11·7	3132	22·9	4749	14·1	4814	3166	8·7	31·6
2	Superphosphate (1904, '8, '12)	**12·2**	3025	23·2	5064	**16·9**	4726	3223	10·9	**33·4**
3	,, (1905 & '9)	10·2	**3949**	23·6	4956	14·6	**4973**	2922	11·7	31·9
4	,, (1906 & '10)	9·7	3913	**24·1**	5419	16·0	5280	**2682**	12·8	34·9
5	,, (1907 & '11)	9·7	4221	23·6	**5698**	16·4	5641	3190	**14·2**	35·4
G 1	Bone-Meal (1904, '8, & '12).	**12·9**	3176	23·1	5203	**16·7**	4445	3345	9·9	**32·8**
2	,, (1905 & '9) .	10 1	**3636**	22·1	5821	14·3	**4922**	3657	9·9	32 7
3	Unmanured	10·2	3495	20·6	5491	12·7	4247	3701	9·2	29·0
4	Bone-Meal (1906 & '10) .	9·9	3450	**22·6**	6043	14·2	4711	**3263**	10·5	31·8
5	,, (1907 & '11) .	9·2	3525	22·1	**6276**	19·9	5285	3512	**12·6**	34·4
H 1	Basic Slag (1904, '8, '12) .	**11·8**	4400	20·5	6285	**13·8**	4182	3564	11·5	**35·7**
2	,, (1905 & '9) . .	10·4	**4002**	21·3	5930	13·6	**4530**	3596	12·0	33·7
3	,, (1906 & '10) .	9·4	3662	**21·4**	5860	13·6	4431	**3943**	12·5	29·1
4	,, (1907 & '11) .	9·1	3624	17·0	**5816**	14·4	3860	3804	**12·0**	32 5
5	Unmanured . . .	8·6	3293	17·4	5933	11·4	4511	4005	10·5	30·1

The yields on the plots to which the manure was applied in any given year are printed in heavier type.
* Dressed Grain only.

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