ROTHAMSTED RESEARCH

# Guide to the Experimental Plots - 1913

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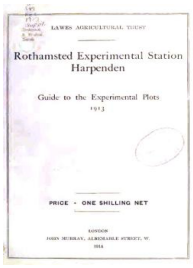


## Hoos Field - Potato Plots - Residue of Manures

### Rothamsted Research

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# HOOS FIELD—LEGUMINOUS PLOTS

## 1848-9 ONWARDS

The small plots (see Plan on page 40) represent portions of the original plots on which attempts have been made to grow leguminous plants continuously since 1848. Various combinations of mineral manures have been used up till 1898, but after the first few years very small crops have been grown, and the clovers in particular generally fail. After fallowing in 1903 to clean the plots, they were resown as before in 1904.

The remainder of the area was formerly occupied by similar small plots of the same leguminous plants. These were ploughed up in 1898, and five crops of wheat were taken without manure in order to test the amount of nitrogen accumulated by the leguminous crop and left in the soil.

In 1904 black tartarian oats were sown, and in the oats, lucerne, red clover, and alsike clover were sown on three strips; a fourth strip, fallowed in 1904, was sown with vetches in October of that year, as shown in the Plan on page 40. The new plots run across the old ones at right angles. The following table shows the crop obtained in 1905 and each year since to 1912 inclusive.

TABLE XIX.—*Produce, Hoos Field Leguminous Land.*

| | Season 1905. | Season 1906. | | Season 1907. | Season 1908. | Season 1909. | Season 1910. | Season 1911. | Season 1912. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cwt. | Cwt. | | Cwt. | Cwt. | Cwt. | Cwt. | Cwt. | Oats Bush. | Straw Cwt. |
| Lucerne . . | 38·1 | 55·2 | | 90·6 | 83·9 | 15·3 | 53·3 | 56·9 | 50·9 | 29·5 |
| Red Clover . | 47·2 | Barley bush. 36·2 | Straw cwt. 25·6 | 67·5 | ... | 2·4 | 60·4 | 23·0 | 37·2 | 23·5 |
| Alsike Clover . | 36·9 | | | 27·8 | ... | 4·0 | 46·3 | 35·7 | 29·1 | 19·2 |
| Vetches . . | 45·8 | 22·3 | | 24·2 | 12·2 | 19·6 | ... | 8·9 | cwt. 5·6 | |

Dates of sowing leguminous seeds :—

Lucerne . 13th May 1904, and 1st June 1909.
Red Clover . 13th May 1904, 10th May 1906, and 1st June 1909.
Alsike Clover . 13th May 1904, 10th May 1906, and 1st June 1909.
Vetches . 3rd October 1904, 5th April 1906, 11th March 1907, 30th May 1907, 5th November 1907, 9th October 1908. Fallow 1910, 18th October 1910.

# HOOS FIELD—POTATO PLOTS

## RESIDUE OF MANURES

On ten plots potatoes were grown with various manures for 26 years (1876-1901). In 1902 the manuring was discontinued and barley sown. Table XX. shows the yields obtained.



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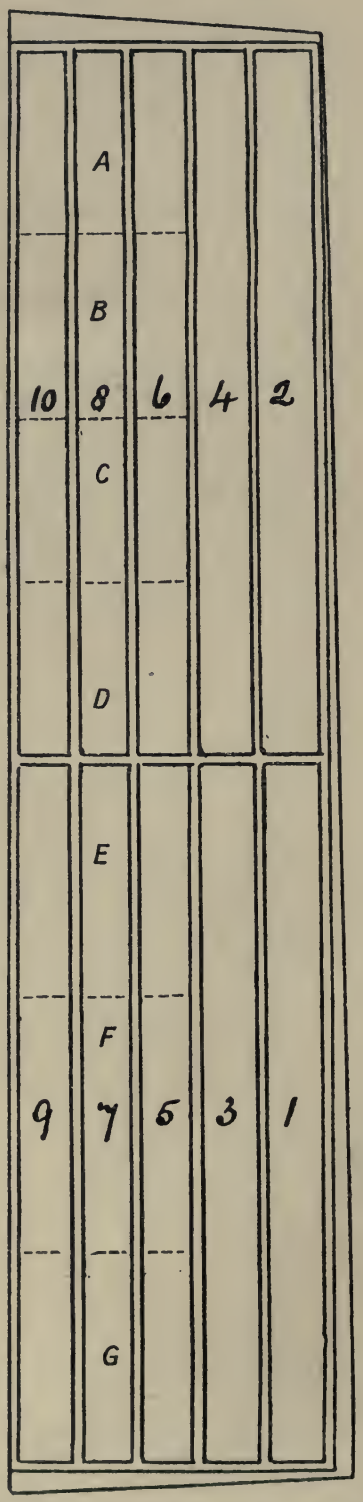
G.—*Plan of the Plots in Hoos Field on which Potatoes were grown without Manure, and with various Manures.*

26 years, 1876-1901.

In 1902 and 1903 Barley, and in 1904 Oats, were sown, without manure, to determine the duration of the residues of the previous manuring In 1905 and each year to 1911 Barley was sown, and in 1912 Oats, on Plots 1-4 without manure. Plots 5-10 sown with Leguminous seeds each year to 1911, and Oats in 1912.




Total area of ploughed land, about $2\frac{1}{10}$ acres. Area of each plot, $\frac{1}{8}$ acre.
The double lines indicate division paths between plot and plot.



*https://doi.org/10.23637/ERADOC-1-121* 

TABLE XX.—*Produce per acre in* 1902-1912, *without Manure, on the Plots which had grown Potatoes, variously Manured, in the* 26 *years,* 1876-1901 *inclusive.*

| Plot. | Potatoes, 1876-1901. Manures per acre per annum. (In the 5 years, 1897 to 1901, 400 lb. Basic Slag was used throughout instead of Superphosphate.) | Average Produce of total Tubers per Acre. | 1902. Barley. Dressed Grain. | 1902. Barley. Total Straw. | 1903. Barley. Dressed Grain. | 1903. Barley. Total Straw. | 1904. Oats. Dressed Grain. | 1904. Oats. Total Straw. | 1905. Barley. Dressed Grain. | 1905. Barley. Total Straw. | 1906. Barley. Dressed Grain. | 1906. Barley. Total Straw. | 1907. Barley. Dressed Grain. | 1907. Barley. Total Straw. | 1908. Barley. Dressed Grain. | 1908. Barley. Total Straw. | 1909. Barley. Dressed Grain. | 1909. Barley. Total Straw. | 1910. Barley. Dressed Grain. | 1910. Barley. Total Straw. | 1911. Barley. Dressed Grain. | 1911. Barley. Total Straw. | 1912. Oats. Dressed Grain. | 1912. Oats. Total Straw. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Tons. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. | Bush. | Lb. |
| 1 | Unmanured, 1876 and since | 1·4 | 33·2 | 1799 | 9·6 | 544 | 23·1 | 1346 | 4·6 | 332 | 9·2 | 612 | 6·2 | 467 | 6·8 | 383 | 9·7 | 948 | 6·2 | 555 | 0·5 | 135 | 4·9 | 483 |
| 2 | Unmanured, 1882 and since. Previously Farmyard Manure, 14 tons . . . | 2·8 | 35·4 | 1872 | 15·2 | 1020 | 21·5 | 1176 | 7·1 | 380 | 17·0 | 1101 | 10·3 | 782 | 7·8 | 617 | 14·7 | 1251 | 11·4 | 927 | 4·0 | 561 | 12·8 | 891 |
| 3 | Farmyard Manure, 14 tons, 1883 and since. Previously Superphosphate also . | 4·8 | 71·0 | 5216 | 46·9 | 3474 | 55·5 | 3060 | 28·3 | 1662 | 36·0 | 2361 | 18·9 | 1727 | 20·2 | 1277 | 24·1 | 2187 | 15·5 | 1914 | 10·8 | 1277 | 15·2 | 1477 |
| 4 | Farmyard Manure, 14 tons, 1883 and since, 1882 and previously Superphosphate, and in 1881 and previously Nitrate Soda =86 lb. Nitrogen also . | 5·1 | 72·4 | 5115 | 44·9 | 3486 | 61·5 | 3258 | 30·3 | 1931 | 40·5 | 2781 | 19·1 | 1671 | 22·6 | 1427 | 24·8 | 2355 | 15·6 | 1725 | 13·6 | 1517 | 19·3 | 1719 |
| | | | | | | | | | | | Red Clover (2 crops). | | Red Clover (2 crops). | | Red Clover (2 crops). | | Red Clover (1 crop). | | Red Clover (2 crops). | | Red Clover (2 crops). | | Oats. Dressed Grain. | Oats. Total Straw. |
| 5 | Ammonium-salts = 86 lb. Nitrogen . . . . | 1·7 | 59·1 | 3774 | 19·2 | 1018 | 24·1 | 1170 | ... | | Cwt. No crop. | | Cwt. 66·4 | | Cwt. 36·2 | | Cwt. 13·2 | | Cwt. 66·5 | | Cwt. 19·9 | | Bush. 33·0 | Lb. 2068 |
| 6 | Nitrate Soda = 86 lb. Nitrogen . . . | 2·1 | 62·9 | 4275 | 18·6 | 911 | 22·7 | 1263 | Plots 5, 7, and 9 Cow Peas. Plant failed. | | *a.* 64·8<br>*b.* 74·0<br>*c.* 57·3<br>*d.* 48·3 | 61·1 | *a.* 62·6<br>*b.* 58·9<br>*c.* 58·6<br>*d.* 54·9 | 58·7 | 20·9 | | 14·4 | | 63·5 | | 13·8 | | 30·9 | 2085 |
| 7 | Ammonium-salts = 86 lb. Nitrogen, and Mixed Mineral Manure* . . | 5·3 | 64·4 | 4286 | 28·9 | 1634 | 30·9 | 1693 | ... | | No crop. | | 91·3 | | 55·3 | | 23·8 | | 106·6 | | 49·8 | | 45·0 | 2905 |
| 8 | Nitrate Soda = 86 lb. Nitrogen, and Mixed Mineral Manure . | 5·4 | 67·0 | 4629 | 26·2 | 1748 | 32·6 | 1635 | Plots 6, 8, and 10 Red Clover. No crop. | | *a.* 88·9<br>*b.* 82·9<br>*c.* 73·9<br>*d.* 72·4 | 79·5 | *a.* 72·0<br>*b.* 60·5<br>*c.* 63·6<br>*d.* 61·8 | 64·5 | 26·8 | | 25·1 | | 113·4 | | 46·7 | | 46·7 | 3086 |
| 9 | Superphosphate only . . | 2·7 | 35·1 | 1811 | 13·3 | 890 | 22·7 | 1104 | ... | | No crop. | | 76·0 | | 40·1 | | 19·1 | | 81·9 | | 24·6 | | 35·3 | 2099 |
| 10 | Mixed Mineral Manure only | 2·9 | 24·8 | 1610 | 12·8 | 887 | 20·6 | 1151 | ... | | *a.* 75·4<br>*b.* 61·9<br>*c.* 73·9<br>*d.* 64·9 | 69·0 | *a.* 63·6<br>*b.* 52·8<br>*c.* 55·0<br>*d.* 53·3 | 56·2 | 24·0 | | 24·9 | | 99·3 | | 32·5 | | 36·8 | 2275 |

*a.* Soil inoculated in 1905 with Hiltner's preparation from Munich.
*b.* " " " Moore's " the United States.
*c.* Soil inoculated in 1905 with soil from a field which had carried Red Clover in 1904.
*d.* Soil left uninoculated.

* "Mixed Mineral Manure," Superphosphate, and Sulphates of Potash, Soda, and Magnesia.