

# Exhaustion Land Experiment Plan

1993-1999

Phase IV

↗ N

<b>Plot 10</b> 101	<b>Plot 8</b> 081	<b>Plot 6</b> 061	<b>Plot 4</b> 041	<b>Plot 2</b> 021
102	082	062	042	022
(PKNaMg) (1876-1901)	(N*PKNaMg) (1876-1901)	(N*) (1876-1901)	(FYM(N*P)) (1876-1901)	(Nil (FYM)) (1876-1901)
103	083	063	043	023
104	084	064	044	024
		<b>"K Test"</b>		
<b>Plot 9</b> 091 <b>(P3)</b>	<b>Plot 7</b> 071 <b>(P3)</b>	<b>Plot 5</b> 051 <b>(P3)</b>	<b>Plot 3</b> 031 <b>(P3)</b>	<b>Plot 1</b> 011 <b>(P3)</b>
092 <b>(P2)</b>	072 <b>(P2)</b>	052 <b>(P2)</b>	032 <b>(P2)</b>	012 <b>(P2)</b>
(P) (1876-1901)	(NPKNaMg) (1876-1901)	(N) (1876-1901)	(FYM(P)) (1876-1901)	(Nil) (1876-1901)
093 <b>(P1)</b>	073 <b>(P1)</b>	053 <b>(P1)</b>	033 <b>(P1)</b>	013 <b>(P1)</b>
094 <b>(P0)</b>	074 <b>(P0)</b>	054 <b>(P0)</b>	034 <b>(P0)</b>	014 <b>(P0)</b>
		<b>"P Test"</b>		

(not to scale)

## Annual Treatments per hectare, 1993-1999:

### "K Test" (Plots 2,4,6,8 and 10)

Basal manuring: 192 kg N and P to all "K Test" sub-plots

kg P: 436 in 1992; 131 in 1993; 65 in 1994-98; 22 in 1999

### "P Test" (Plots 1,3,5,7 and 9)

Basal manuring 192 kg N and 83 kg K to all "P Test" sub-plots

No P applied 1993-1999.

Annual Treatments per hectare, 1986-1992:

(P0): No P

(P1): 44 kg P as triple superphosphate

(P2): 87 kg P as triple superphosphate

(P3): 131 kg P as triple superphosphate

**Cropping:** Winter wheat 1993-1999

**Annual Treatments per hectare, 1856-1901, Phase I:**

Nil : No fertilizer or manure

FYM : 35 of farmyard manure since 1876

Nil (FYM) : FYM 1876-1881, no fertilizer or manure 1882-1901

FYM (P) : FYM plus P until 1882, FYM only 1883-1901

FYM (N\*P) : FYM plus N\* and P until 1881, FYM plus P 1882, FYM only 1883-1901

N : 96 kg N as ammonium salts (ammonium sulphate & ammonium chloride)

N\* : 96 kg N as sodium nitrate

P : 34 kg P (as superphosphate 1876-96, from basic slag 1897-1901)

K : 137 kg K as potassium sulphate (91 kg K 1859-74)

Na : 16 kg Na as sodium sulphate

Mg : 11 kg Mg as magnesium sulphate

**Sources of data:**

Rothamsted (1991) "Guide to the Classical Field Experiments",  
*Rothamsted Experimental Station, Lawes Agricultural Trust, Harpenden UK*

Poulton, P. R. , Johnston, A. E. and White, R. P. (2013) "Plant-available soil phosphorus. Part I: the response of winter wheat and spring barley to Olsen P on a silty clay loam", *Soil Use and Management*, 29, 4-11

Johnston, A.E., Poulton, P.R., White, R.P. and Macdonald, A.J. (2016) "Determining the longer term decline in plant-available soil phosphorus from short-term measured values", *Soil Use and Management* doi:10.1111/sum.12253

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