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# Yields of the Field Experiments 1980

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## 80/R/RN/7 Residual Phosphate

### Rothamsted Research

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80/R/RN/7

RESIDUAL PHOSPHATE

Object: Originally to study the fresh and residual effects of phosphate fertiliser on the yields of three arable crops grown in rotation. From 1974 the effects on ley and on yield and pathogens of continuous w. wheat were studied. In 1980 only ley was included - Great Field IV and Sawyers I.

Sponsors: G.E.G. Mattingly.

The 21st year, ley.

For previous years see 'Details' 1967 and 1973 and 74-79/R/RN/7.

Design: Great Field IV: 3 series each of 1 randomised block of 12 plots.  
Sawyers I: 3 series each of 2 randomised blocks of 12 plots.

Whole plot dimensions:

Great Field IV: 4.27 x 18.3

Sawyers I: 4.27 x 20.1

Treatments:

P205 Rates and frequency of applying phosphate:-

NONE 0

Annual dressings, kg P205:

29 ANN	29
57 ANN	57
115 ANN	115
172 ANN	172

Triennial dressings, kg P205 (last applied 1978):

86 TRI	86
176 TRI	172

Six-yearly dressings, kg P205 (last applied 1973):

344 SIX	344
688 SIX	688
1032 SIX	1032

Single dressing, kg P205 (applied autumn 1959):

376 G(1)	376 as Gafsa rock phosphate
376 S(1)	376 as granular superphosphate

NOTES: (1) From 1974 the original rotation of potatoes, s. barley, swedes on both fields was changed. Blocks after barley were sown to w.wheat on Sawyers I, to ley on Great Field IV. In 1978 & 1979 one series was sown to ley each year on Sawyers I. In 1980 the remaining series on Sawyers I was followed.

(2) Since 1960 all phosphate has been applied as superphosphate.

(3) The six-yearly dressings were applied half in autumn before ploughing, half in spring.

80/R/RN/7

Standard applications:

Leys: Manures: K<sub>2</sub>O at 250 kg as muriate of potash.  
Fallow: Manures: Chalk at 2.9 t.

Cultivations, etc.:-

Leys: K applied: 28 Nov, 1979. Test P applied: 13 Mar, 1980. Cut:  
29 May, 22 July, 23 Oct (Sawyers I only), 24 Oct (Gt Field IV only).  
Fallow: Chalk applied: 8 Nov, 1979. Ploughed: 22 Nov. Heavy  
spring-tine cultivated: 22 Apr, 1980. Spring-tine cultivated: 22  
May. Rotary harrowed: 4 Aug.

GREAT FIELD IV

SERIES I LEY

DRY MATTER TONNES/HECTARE

CUT 1 (29/5/80) CUT 2 (22/7/80) CUT 3 (24/10/80) TOTAL OF 3 CUTS

P205				
NONE	1.75	1.81	0.90	4.46
29 ANN	3.19	2.36	1.41	6.96
57 ANN	3.32	2.45	2.08	7.85
115 ANN	3.37	2.57	1.81	7.75
172 ANN	3.74	2.79	1.63	8.16
86 TRI	2.71	2.19	1.71	6.61
172 TRI	3.16	2.38	1.70	7.24
344 SIX	3.09	2.02	1.34	6.44
688 SIX	3.40	2.21	1.58	7.20
1032 SIX	3.50	2.83	1.60	7.93
376 G(1)	2.31	2.07	1.21	5.58
376 S(1)	2.19	1.87	0.87	4.93
MEAN	2.98	2.30	1.49	6.76
MEAN DM%	19.3	19.1	22.1	20.1

80/R/RN/7 GREAT FIELD IV

SERIES II LEY

DRY MATTER TONNES/HECTARE

CUT 1 (29/5/80) CUT 2 (22/7/80) CUT 3 (24/10/80) TOTAL OF 3 CUTS

	CUT 1 (29/5/80)	CUT 2 (22/7/80)	CUT 3 (24/10/80)	TOTAL OF 3 CUTS
P205				
NONE	1.66	1.57	0.85	4.08
29 ANN	3.43	2.24	1.41	7.08
57 ANN	3.89	2.51	1.69	8.09
115 ANN	4.18	2.55	1.73	8.45
172 ANN	4.38	2.56	2.02	8.95
86 TRI	3.13	2.25	1.35	6.72
172 TRI	3.78	2.45	1.56	7.79
344 SIX	3.43	2.39	1.67	7.49
688 SIX	4.33	2.37	1.66	8.37
1032 SIX	4.01	2.40	1.59	8.00
376 G(1)	2.65	2.17	0.98	5.81
376 S(1)	2.65	1.69	1.11	5.45
MEAN	3.46	2.26	1.47	7.19
MEAN DM%	20.3	20.1	21.6	20.7

SERIES III LEY

DRY MATTER TONNES/HECTARE

CUT 1 (29/5/80) CUT 2 (22/7/80) CUT 3 (24/10/80) TOTAL OF 3 CUTS

	CUT 1 (29/5/80)	CUT 2 (22/7/80)	CUT 3 (24/10/80)	TOTAL OF 3 CUTS
P205				
NONE	2.17	1.30	0.97	4.44
29 ANN	4.48	2.17	1.59	8.25
57 ANN	4.25	2.05	1.67	7.97
115 ANN	4.21	2.51	1.64	8.37
172 ANN	4.87	2.56	2.00	9.43
86 TRI	3.35	2.06	1.64	7.06
172 TRI	4.23	2.10	1.47	7.80
344 SIX	4.02	1.96	1.51	7.50
688 SIX	4.03	2.56	1.55	8.15
1032 SIX	4.75	2.12	1.78	8.65
376 G(1)	2.44	1.72	1.26	5.42
376 S(1)	2.24	1.20	0.70	4.14
MEAN	3.75	2.03	1.48	7.26
MEAN DM%	19.8	21.2	23.3	21.5

PLOT AREA HARVESTED 0.00186

80/R/RN/7 SAWYERS I

SERIES II LEY

DRY MATTER TONNES/HECTARE

CUT 1 (29/5/80) CUT 2 (22/7/80) CUT 3 (23/10/80) TOTAL OF 3 CUTS

P205				
NONE	3.55	1.85	1.19	6.59
29 ANN	3.79	2.51	1.65	7.94
57 ANN	3.89	2.85	1.87	8.61
115 ANN	3.66	3.01	1.91	8.58
172 ANN	3.57	2.86	2.09	8.52
86 TRI	3.59	2.50	1.64	7.74
172 TRI	3.79	2.28	1.73	7.79
344 SIX	3.54	2.24	1.46	7.24
688 SIX	3.67	2.43	1.85	7.95
1032 SIX	3.67	2.56	2.05	8.28
376 G(1)	3.49	1.89	1.33	6.72
376 S(1)	3.47	2.10	1.35	6.93
MEAN	3.64	2.42	1.68	7.74
SED*	0.175	0.240	0.189	0.398
CV%	4.8	9.9	11.3	5.1
MEAN DM%	22.2	20.3	25.5	22.7

\* NOTE STRATUM STANDARD ERROR (11 df) is also equal to this figure

SERIES III LEY

DRY MATTER TONNES/HECTARE

CUT 1 (29/5/80) CUT 2 (22/7/80) CUT 3 (23/10/80) TOTAL OF 3 CUTS

P205				
NONE	2.03	2.04	1.72	5.80
29 ANN	2.82	2.51	2.10	7.43
57 ANN	2.81	2.66	2.24	7.71
115 ANN	3.10	2.63	2.06	7.80
172 ANN	3.03	2.83	2.30	8.17
86 TRI	2.00	2.57	1.89	6.45
172 TRI	2.67	2.63	2.03	7.34
344 SIX	2.70	2.39	1.88	6.97
688 SIX	2.57	2.75	2.18	7.49
1032 SIX	2.98	2.61	2.11	7.70
376 G(1)	2.18	2.09	1.49	5.76
376 S(1)	2.03	2.48	1.68	6.18
MEAN	2.58	2.52	1.97	7.07
SED*	0.273	0.181	0.161	0.489
CV%	10.6	7.2	8.2	6.9
MEAN DM%	22.6	19.0	24.0	21.9

PLOT AREA HARVESTED 0.00204