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Yields of the Field Experiments 1977

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77/R/RN/7 Residual Phosphate - Ley, Wheat

Rothamsted Research

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77/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. Since 1974 the effects on ley and on yield and pathogens of continuous wheat are also studied - Great Field IV and Sawyers I.

Sponsors: G.E.G. Mattingly, D.B. Slope.

The 18th year, ley (Great Field IV): wheat (Sawyers I).

For previous years see 'Details' 1967 and 1973 and 74-76/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 1975):

86 TRI 86
172 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) Since 1974 the original rotation of potatoes, barley, swedes on both fields has been changed. Blocks after barley have been sown to continuous wheat on Sawyers I, to ley on Great Field IV.
(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.

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Standard applications:

Leys (Great Field IV only): Manures: K20 at 250 kg as muriate of potash.
 Wheat (Sawyers I only): Manures: K20 at 90 kg as muriate of potash. 'Nitro-Chalk' at 500 kg. Weedkillers: Ioxynil at 0.53 kg with mecoprop at 1.6 kg in 220 l.

Seed: Wheat: Cappelle, sown at 190 kg.

Cultivations, etc.:-

Leys: Standard K applied: 14 Dec, 1976. Treatment P applied: 3 Mar. Cut three times: 25 May, 20 July, 24 Nov.
 Wheat: Ploughed: 30 Sept, 1976. Heavy spring-tine cultivated: 3 Nov. Standard K applied: 4 Nov. Treatment P applied: 19 Nov. Seed sown, spring-tine cultivated: 20 Nov. N applied: 13 Apr. Weedkillers applied: 10 May. Combine harvested: 9 Sept.

NOTE: Incidence of take-all was measured in May and July on Sawyers I only.

77/R/RN/7 GREAT FIELD IV

SERIES I

DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

CUT 1 (25/5/77) CUT 2 (20/7/77) CUT 3(24/11/77) TOTAL OF 3 CUTS

P205				
NONE	2.28	4.75	1.61	8.64
29 ANN	3.04	4.00	2.10	9.14
57 ANN	3.09	3.24	1.72	8.06
115 ANN	2.93	4.00	2.10	9.03
172 ANN	3.79	4.27	2.20	10.27
86 TRI	3.51	2.77	2.17	8.45
172 TRI	1.96	4.63	1.47	8.06
344 SIX	3.27	3.83	2.07	9.17
688 SIX	3.47	4.10	2.34	9.91
1032 SIX	2.57	4.80	2.11	9.48
376 G(1)	2.38	4.91	2.05	9.34
376 S(1)	2.60	4.35	1.62	8.57
MEAN	2.91	4.14	1.96	9.01
MEAN DM%	21.5	22.8	24.4	22.9
PLOT AREA HARVESTED	0.00186			

77/R/RN/7 GREAT FIELD IV

SERIES II

DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

CUT 1 (25/5/77) CUT 2 (20/7/77) CUT 3(24/11/77) TOTAL OF 3 CUTS

P205				
NONE	1.49	3.69	0.96	6.13
29 ANN	1.10	4.02	1.45	6.57
57 ANN	1.51	3.24	1.58	6.33
115 ANN	1.21	3.83	1.57	6.61
172 ANN	1.32	3.28	1.41	6.01
86 TRI	1.30	3.39	1.19	5.88
172 TRI	0.96	4.30	1.41	6.67
344 SIX	1.37	3.94	1.30	6.61
688 SIX	1.53	3.91	1.37	6.82
1032 SIX	0.89	3.24	0.91	5.04
376 G(1)	1.24	3.57	1.03	5.83
376 S(1)	1.61	4.41	1.27	7.30
MEAN	1.29	3.73	1.29	6.32
MEAN DM%	24.5	24.1	22.3	23.6

PLOT AREA HARVESTED 0.00186

SERIES III

DRY MATTER TONNES/HECTARE

***** TABLES OF MEANS *****

CUT 1 (25/5/77) CUT 2 (20/7/77) CUT 3(24/11/77) TOTAL OF 3 CUTS

P205				
NONE	1.44	4.27	0.67	6.37
29 ANN	1.17	3.50	1.10	5.77
57 ANN	1.42	4.17	1.60	7.20
115 ANN	1.65	4.10	1.50	7.25
172 ANN	1.06	1.74	1.28	4.08
86 TRI	1.38	3.45	1.13	5.96
172 TRI	1.01	3.07	1.53	5.62
344 SIX	1.47	3.55	1.15	6.18
688 SIX	1.33	4.26	1.42	7.01
1032 SIX	1.09	2.29	1.05	4.43
376 G(1)	1.40	3.63	1.09	6.12
376 S(1)	1.24	3.70	0.71	5.65
MEAN	1.30	3.48	1.19	5.97
MEAN DM%	25.0	24.3	21.7	23.7
PLOT AREA HARVESTED	0.00186			

77/R/RN/7 SAWYERS I
 SERIES I 3RD CEREAL WHEAT
 GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

P205	
NONE	5.29
29 ANN	5.76
57 ANN	6.09
115 ANN	6.02
172 ANN	5.60
86 TRI	6.12
172 TRI	6.12
344 SIX	5.38
688 SIX	5.88
1032 SIX	6.12
376 G(1)	5.61
376 S(1)	5.55
MEAN	5.80

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	P205
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SED	0.420

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.420	7.3
GRAIN MEAN DM%	81.1		

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

P205	
NONE	4.46
29 ANN	4.51
57 ANN	5.07
115 ANN	4.78
172 ANN	5.29
86 TRI	4.69
172 TRI	4.95
344 SIX	4.58
688 SIX	5.20
1032 SIX	5.22
376 G(1)	4.43
376 S(1)	4.21
MEAN	4.78

STRAW MEAN DM% 91.0

PLOT AREA HARVESTED 0.00562

77/R/RN/7 SAWYERS I
 SERIES II 4TH CEREAL WHEAT
 GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

P205	
NONE	3.27
29 ANN	3.91
57 ANN	4.90
115 ANN	4.65
172 ANN	5.12
86 TRI	4.74
172 TRI	4.01
344 SIX	3.55
688 SIX	4.64
1032 SIX	5.06
376 G(1)	3.07
376 S(1)	3.79
MEAN	4.23

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	P205
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SED	0.569

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.569	13.5
GRAIN MEAN DM%	81.7		

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

P205	
NONE	2.92
29 ANN	3.51
57 ANN	4.08
115 ANN	4.24
172 ANN	4.16
86 TRI	3.48
172 TRI	3.48
344 SIX	3.36
688 SIX	4.32
1032 SIX	4.25
376 G(1)	3.01
376 S(1)	3.31
MEAN	3.68

STRAW MEAN DM% 91.2

PLOT AREA HARVESTED 0.00562

77/R/RN/7

SERIES III 5TH CEREAL WHEAT

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

P205	
NONE	4.29
29 ANN	3.89
57 ANN	4.09
115 ANN	3.86
172 ANN	4.32
86 TRI	3.44
172 TRI	4.28
344 SIX	3.56
688 SIX	3.87
1032 SIX	4.31
376 G(1)	3.89
376 S(1)	3.31
MEAN	3.93

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	P205
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SED	0.527

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.527	13.4
GRAIN MEAN DM%	81.8		

STRAW TONNES/HECTARE

***** TABLES OF MEANS *****

P205	
NONE	3.33
29 ANN	3.13
57 ANN	3.44
115 ANN	3.67
172 ANN	3.58
86 TRI	2.84
172 TRI	3.63
344 SIX	3.50
688 SIX	3.34
1032 SIX	3.31
376 G(1)	3.48
376 S(1)	2.85
MEAN	3.34

STRAW MEAN DM% 90.6

PLOT AREA HARVESTED 0.00562