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Yields of the Field Experiments 1973

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73/R/RN/7 - Residual Phosphate - Potatoes, Barley, Swedes

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73/R/RN/7

RESIDUAL PHOSPHATE

Object: To study the direct and residual effects of phosphate fertiliser on yields of three crops grown in rotation - Great Field IV and Sawyers I.

Sponsor: G.E.G. Mattingly.

The fourteenth year, potatoes, barley, swedes.

For previous years see 'Details' 1967 and 68/B/5(t), 69/R/RN/7, 70/R/RN/7(t) and 71-72/R/RN/7.

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

Whole plot dimensions:-

Great Field IV: 4.27 x 18.3. Area harvested: potatoes and barley - 0.00520, swedes - 0.00390.

Sawyers I: 4.27 x 20.1. Area harvested: potatoes and barley - 0.00572, swedes - 0.00429.

Treatments: Rates and frequency of applying phosphate:	P2O5
None	0
Annual dressings, kg P2O5:-	
29	29 ANN
57	57 ANN
115	115 ANN
172	172 ANN
Triennial dressings, kg P2O5 (last applied 1972):-	
86	86 TRI
172	172 TRI
Six-yearly dressings, kg P2O5 (last applied 1973):-	
344	344 SIX
688	688 SIX
1032	1032 SIX
Single dressing, kg P2O5 applied in 1959:-	
376 as Gafsa rock phosphate	376 G(1)
376 as superphosphate	376 S(1)

- NOTES: (1) Since 1960 all phosphate has been applied as superphosphate.
(2) The six-yearly dressings were applied half in autumn before ploughing, half in spring.
(3) For a fuller record of treatments see 'Details' etc.

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Standard applications:-

Potatoes: Manures: N at 250 kg as 'Nitro-Chalk'. K₂O at 250 kg as sulphate of potash. Weedkiller: Linuron at 1.1 kg and paraquat at 0.31 kg ion in 450 l. Fungicide: Mancozeb at 1.3 kg in 370 l on 3 occasions. Insecticide: Demeton-s-methyl at 0.25 kg applied with the mancozeb on the first occasion.

Barley: Manures: (25:0:16) at 400 kg. Weedkiller: Dicamba, mecoprop and MCPA ('Banlene Plus' at 5.6 l in 220 l).

Swedes: Manures: N at 63 kg as 'Nitro-Chalk'. K₂O at 125 kg as sulphate of potash.

Seed: Potatoes: Majestic, Foundation Stock, chitted.

Barley: Julia, dressed with ethirimol, sown at 160 kg.

Swedes: Wilhelmsburger, dressed gamma BHC with captan sown at 1.4 kg.

Cultivations, etc.:- (both fields):- Ploughed: 27 Nov, 1972.

Potatoes: Six-yearly P applied: 14 Nov, 1972 and 29 Jan, 1973.

N, K and remaining P applied, potatoes planted: 9 Apr. Weedkiller applied: 12 May. Grubbed: 12 June. Rotary ridged: 15 June.

Fungicide and insecticide applied: 2 July. Fungicide applied: 18 July and 9 Aug. Haulm destroyed mechanically: 14 Sept. Sprayed with undiluted BOV at 220 l: 20 Sept. Lifted: 8 Oct.

Barley: Six-yearly P applied: 14 Nov, 1972 and 29 Jan, 1973. Remaining P applied: 22 Feb. Seed sown: 12 Mar. Weedkiller applied: 15 May. Combine harvested: 11 Aug.

Swedes: Six-yearly P applied: 14 Nov, 1972, 29 Jan, 1973. K applied: 27 Apr. Remaining P applied: 14 May. N applied: 16 May. Seed sown: 17 May. Singled: 25 June. Lifted: 8 Nov.

Standard errors per plot. Sawyers I:

Potatoes: total tubers, tonnes/hectare: 1.74 or 5.2% (11 d.f.)

Barley: grain, tonnes/hectare: 0.233 or 3.9% (11 d.f.)

Swedes: roots, tonnes/hectare: 2.66 or 11.4% (11 d.f.)

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TABLES OF MEANS

POTATOES

	TOTAL TUBERS: TONNES/HECTARE		% WARE: 3.81 CM (1.5 INCH) RIDDLE	
	Great Field IV	Sawyers I	Great Field IV	Sawyers I
P205				
0	19.6	28.7	95.4	97.3
29 ANN	28.3	31.2	94.1	97.0
57 ANN	17.0	31.8	85.2	96.3
115 ANN	28.8	35.9	90.8	96.3
172 ANN	21.3	37.2	82.7	96.5
86 TRI	25.6	28.4	94.1	97.0
172 TRI	24.4	34.4	92.0	97.3
344 SIX	36.9	39.8	93.3	96.6
688 SIX	19.1	36.8	78.9	94.5
1032 SIX	40.4	38.3	93.3	93.9
376 G(1)	25.1	27.6	93.1	97.3
376 S(1)	17.0	28.5	92.9	96.9
Mean	25.3	33.2	90.5	96.4

Sawyers I only - TOTAL TUBERS

STANDARD ERROR OF DIFFERENCES

P205

1.74

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BARLEY

	GRAIN: TONNES/HECTARE		STRAW: TONNES/HECTARE	
	Great Field IV	Sawyers I	Great Field IV	Sawyers I
P205				
0	3.37	5.02	4.16	3.66
29 ANN	4.73	5.98	4.47	4.30
57 ANN	4.73	6.10	4.22	4.19
115 ANN	4.75	5.80	4.24	4.31
172 ANN	4.14	6.08	4.95	4.49
86 TRI	3.88	6.10	4.01	3.90
172 TRI	4.69	6.30	4.17	4.44
344 SIX	4.96	5.73	4.58	3.94
688 SIX	4.62	6.15	4.61	4.55
1032 SIX	4.30	6.13	4.58	4.63
376 G(1)	3.44	5.59	4.43	3.92
376 S(1)	4.02	5.94	4.85	4.10
Mean	4.30	5.91	4.44	4.20

Sawyers I only - GRAIN

STANDARD ERROR OF DIFFERENCES

P205				
0.233				
Mean D.M. %	75.1	76.5	94.1	92.9

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SWEDES, ROOTS: TONNES/HECTARE

	Great Field IV	Sawyers I
P205		
0	1.9	11.5
29 ANN	15.7	20.8
57 ANN	19.6	27.5
115 ANN	14.5	30.3
172 ANN	23.4	28.6
86 TRI	15.2	21.1
172 TRI	12.3	26.5
344 SIX	24.6	28.3
688 SIX	21.5	30.7
1032 SIX	20.8	31.7
376 G(1)	8.5	12.0
376 S(1)	3.3	11.2
Mean	15.1	23.4

Sawyers I only

STANDARD ERROR OF DIFFERENCES

P205

2.66