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Yields of the Field Experiments 1974

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74/S/RN/2 Rotation II - Potatoes, Barley, Sugar Beet

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ROTATION II

Object: To measure, by crop yields and soil analysis, the residual value of P applied as FYM or superphosphate in the periods 1899-1964 and 1965-1967 - Saxmundham.

Sponsors: G.E.G. Mattingly, A.E. Johnston.

The sixth year of revised scheme, potatoes, barley, sugar beet.

For previous years see 'Details' 1967, 68/A/10(t), 69/S/RN/2(t) and 70-73/S/RN/2.

Whole plot dimensions: 5.49 x 39.8. Sub plot area harvested:
Potatoes - 0.00078, Barley - 0.00056, Sugar beet - 0.00100.

Treatments: From 1899-1964 the experiment tested farmyard manure and nitrogen and phosphate fertilisers applied to a rotation of crops. Since 1965 the treatments have been changed to evaluate old residues of P (from FYM and superphosphate) and new residues from treatments applied 1965-1967. All crops of the rotation - potatoes, barley, sugar beet, barley test combinations of:-

Whole plots: 1. Residues of previous treatments:-

RESIDUE

	Approximate total dressing 1899-1964	Total dressing 1965-1967	
Plot 1	None	None	(O)O
Plot 2	400 tonnes FYM	None	(D)O
Plot 3	400 tonnes FYM, 2.7 tonnes P2O5	None	(DP)O
Plot 4	400 tonnes FYM, 2.7 tonnes P2O5	100 tonnes FYM	(DP)D2
Plot 5	400 tonnes FYM, 2.7 tonnes P2O5	100 tonnes FYM, 0.56 tonnes P2O5	(DP)D2P1
Plot 6	400 tonnes FYM, 2.7 tonnes P2O5	0.56 tonnes P2O5	(DP)P1
Plot 7	400 tonnes FYM, 2.7 tonnes P2O5	1.13 tonnes P2O5	(DP)P2
Plot 8	326 tonnes FYM, 4.3 tonnes P2O5 (until 1952 only)	None	(DP52)O

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Potatoes and sugar beet test in addition to 1:-

Sub plots: 2. Phosphate residues 1970-72 (total P2O5 applied (kg)):	P2O5(72)
None (2 sub plots/plot)	(0)
126	(126)
252	(252)
378	(378)

and some of the combinations of 2 with:-

3. Phosphate in 1974 (kg P2O5):	P2O5(74)
None	0
63	63
189	189

Barley tests in addition to 1:-

Sub plots: 2. Phosphate residues 1969-71 (total P2O5 applied (kg)):	P2O5(71)
None (2 sub plots/plot)	(0)
126	(126)
252	(252)
378	(378)

and some of the combinations of 2 with:-

3. Phosphate in 1973 and 74 (kg P2O5):	P2O5 73 74
1973 1974	
None None	(0) 0
63 63	(63) 63
189 None	(189) 0

Standard applications:

Potatoes: Manures: K2O at 380 kg as muriate of potash before ploughing, (25:0:16) at 1000 kg to seedbed. Weedkillers: Linuron at 0.84 kg plus paraquat at 0.42 kg ion in 340 l. Insecticide: Menazon at 0.28 kg in 340 l on the first occasion and in 280 l on the second. Fungicide: Mancozeb at 1.35 kg in 280 l on two occasions.
Barley: Manures: (25:0:16) at 310 kg. Weedkiller: Dichlorprop plus MCPA ('Mephetol-Plus' at 5.6 l in 280 l). Fungicide: Tridemorph at 0.53 kg applied with the weedkiller.

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Sugar beet: Manures: K2O at 380 kg as muriate of potash before ploughing. (25:0:16) at 750 kg to seedbed. Insecticide: Menazon at 0.28 kg in 340 l on the first and in 280 l on the second and third occasions.

Seed: Potatoes: King Edward.

Barley: Julia, dressed with ethirimol, sown at 170 kg.

Sugar beet: Klein E, rubbed and graded, sown at 18 kg.

Cultivations, etc.:-

Potatoes: Autumn K applied: 19 Sept, 1973. Ploughed: 22 Oct. Test P applied: 28 Mar, 1974. Basal NK applied, rotary cultivated and potatoes planted: 8 Apr. Weedkiller applied: 7 May. Insecticide applied: 12 June and 10 July. Fungicide applied: 10 July and 24 July. Lifted: 1 Oct.

Barley: Ploughed: 22 Oct, 1973. Test P applied: 19 Mar, 1974. NK applied and seed sown: 21 Mar. Weedkiller and fungicide applied: 21 May. Harvested by hand: 20 Aug.

Sugar beet: Autumn K applied: 19 Sept, 1973. Ploughed: 22 Oct. Basal NK and test P applied, seed sown: 27 Mar, 1974. Insecticide applied: 12 June, 10 July and 24 July. Lifted: 4 Nov.

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TABLES OF MEANS

POTATOES. TOTAL TUBERS: TONNES/HECTARE

P205(72)	0	0	0	126		252		378	
P205(74)	0	63	189	63	189	63	189	63	189
RESIDUE									
(O)O	18.6		25.0	34.3			30.2	30.2	
(D)O	22.1	29.1			28.5	37.8			43.0
(DP)O	34.3	46.5			48.8	43.0			45.3
(DP)D2	50.6		43.0	41.3			55.8	47.7	
(DP)D2P1	45.9	47.7			56.4	54.6			51.7
(DP)P1	52.9	51.7			45.9	58.1			50.0
(DP)P2	52.3		48.8	54.6			53.5	57.0	
(DP52)O	45.3		57.0	48.8			54.6	44.2	

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BARLEY AFTER POTATOES

P205(71)	0	0	0	126	252	378
P2057374	(0)0	(63)63	(189)0	(63)63 (189)0	(63)63 (189)0	(63)63 (189)0

GRAIN: TONNES/HECTARE

RESIDUE

(O)O	4.29	5.38		5.08	5.05		5.07
(D)O	4.87		4.87	5.07		5.40	5.89
(DP)O	5.08		5.17	5.44		5.48	5.47
(DP)D2	5.62	5.15		5.35	5.45		5.49
(DP)D2P1	5.20		5.27	5.36		5.17	5.71
(DP)P1	5.64		5.73	5.64		5.47	5.45
(DP)P2	4.96	5.90		5.47	5.68		5.31
(DP52)O	5.92	5.80		5.15	5.08		5.71

STRAW: TONNES/HECTARE

RESIDUE

(O)O	3.90	4.49		4.20	4.46		3.90
(D)O	4.90		3.93	4.20		4.37	5.06
(DP)O	4.65		4.36	4.57		4.31	4.57
(DP)D2	4.92	5.20		4.38	4.69		4.81
(DP)D2P1	5.04		4.49	4.53		4.83	4.78
(DP)P1	5.22		5.24	5.18		5.30	4.34
(DP)P2	4.47	5.20		4.60	5.02		4.60
(DP52)O	5.26	5.23		4.49	4.80		4.45

Mean D.M. % Grain: 83.3
Straw: 87.2

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SUGAR BEET

P205(72)	0	0	0	126	252	378
P205(74)	0	63	189	63 189	63 189	63 189

ROOTS (WASHED): TONNES/HECTARE

RESIDUE

(O)O	17.0	20.0			21.9	28.9		27.4
(D)O	25.1		24.5	27.6		28.5	27.9	
(DP)O	22.7		30.0	33.7		34.1	28.6	
(DP)D2	30.5	32.6			24.3	34.0		28.7
(DP)D2P1	35.7		26.1	29.0		31.6	33.1	
(DP)P1	27.0		35.3	27.3		31.3	33.9	
(DP)P2	27.1	33.8			32.5	30.0		32.7
(DP52)O	34.8	24.9			34.6	26.0		26.3

SUGAR PERCENTAGE

RESIDUE

(O)O	14.6	14.2			14.6	14.6		14.6
(D)O	14.9		15.1	15.4		15.4	15.2	
(DP)O	14.4		15.2	15.9		15.7	14.8	
(DP)D2	15.6	15.6			14.7	16.1		14.9
(DP)D2P1	15.6		14.3	14.8		15.1	15.3	
(DP)P1	14.9		15.7	15.4		14.6	15.0	
(DP)P2	14.6	15.4			15.6	15.1		15.5
(DP52)O	15.3	14.5			15.2	15.1		14.4

TOTAL SUGAR: TONNES/HECTARE

RESIDUE

(O)O	2.48	2.85			3.21	4.23		4.01
(D)O	3.75		3.71	4.27		4.38	4.25	
(DP)O	3.28		4.57	5.37		5.34	4.23	
(DP)D2	4.77	5.08			3.57	5.47		4.28
(DP)D2P1	5.56		3.74	4.30		4.76	5.05	
(DP)P1	4.02		5.54	4.20		4.56	5.09	
(DP)P2	3.97	5.22			5.07	4.52		5.06
(DP52)O	5.33	3.62			5.27	3.92		3.78

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SUGAR BEET

P205(72)	0	0	0	126	252	378
P205(74)	0	63	189	63 189	63 189	63 189

TOPS: TONNES/HECTARE

RESIDUE							
(O)O	21.7	36.6		37.1	33.5		32.1
(D)O	35.7		40.7	40.7		33.2	35.9
(DP)O	34.6		38.4	34.4		37.5	35.3
(DP)D2	33.2	39.1		38.2	34.8		35.5
(DP)D2P1	38.4		37.5	38.7		40.9	39.6
(DP)P1	36.6		37.3	34.4		39.1	36.2
(DP)P2	36.9	40.9		38.9	36.2		41.1
(DP52)O	37.3	35.0		42.5	39.6		36.2

PLANT NUMBER: THOUSANDS/HECTARE

RESIDUE							
(O)O	132.6	127.6		106.6	114.6		86.7
(D)O	121.6		123.6	103.7		92.7	94.7
(DP)O	99.7		111.6	104.6		100.7	115.6
(DP)D2	95.7	104.6		108.6	113.6		97.7
(DP)D2P1	111.6		81.7	113.6		107.6	105.6
(DP)P1	113.6		102.7	101.7		109.6	92.7
(DP)P2	98.1	104.6		104.6	99.7		109.6
(DP52)O	99.7	107.6		103.7	103.7		81.7

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BARLEY AFTER SUGAR BEET

P205(71)	0	0	0	126	252	378
P2057374	(0)0	(63)63	(189)0	(63)63 (189)0	(63)63 (189)0	(63)63 (189)0

GRAIN: TONNES/HECTARE

RESIDUE								
(O)O	2.86		3.50	4.15		4.25	4.24	
(D)O	3.68	3.90		4.66	4.57			4.27
(DP)O	4.32	5.35		4.87	4.96			4.56
(DP)D2	4.96		4.83	5.08		5.42	5.23	
(DP)D2P1	5.24	4.61		5.23	4.73			5.29
(DP)P1	5.13	4.65		5.44	5.17			5.03
(DP)P2	5.23		4.75	4.82		4.98	5.22	
(DP52)O	5.16		5.19	5.76		5.96	5.72	

STRAW: TONNES/HECTARE

RESIDUE								
(O)O	2.65		3.24	3.31		3.20	3.49	
(D)O	3.18	3.11		3.62	3.83			3.78
(DP)O	5.59	4.19		3.92	3.94			3.82
(DP)D2	3.97		4.03	4.16		4.36	4.18	
(DP)D2P1	4.23	3.96		4.30	4.20			4.35
(DP)P1	4.25	3.96		4.27	4.40			4.31
(DP)P2	4.34		4.06	4.28		4.56	4.43	
(DP52)O	4.43		4.64	4.86		5.06	4.91	

Mean D.M. % Grain: 86.5
Straw: 78.0