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## Yields of the Field Experiments 1977

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### 77/S/RN/2 Rotation II - Wheat, Barley

#### Rothamsted Research

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77/S/RN/2

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 ninth year of revised scheme, wheat, barley.

For previous years see 'Details' 1967 & 1973, and 74-76/S/RN/2.

Whole plot dimensions: 5.49 x 39.8.

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 - were grown until 1974. The whole experiment was sown to barley in 1975 and 1976, wheat and barley in 1977, and tests combinations of:

Whole plots

1. RESIDUE Residues of previous treatments:-

		Approximate total dressing 1899-1964	Total dressing 1965-1967
(O)0	Plot 1	None	None
(D)0	Plot 2	400 tonnes FYM	None
(DP)0	Plot 3	400 tonnes FYM, 2.7 tonnes P205	None
(DP)D2	Plot 4	400 tonnes FYM, 2.7 tonnes P205	100 tonnes FYM
(DP)D2P1	Plot 5	400 tonnes FYM, 2.7 tonnes P205	100 tonnes FYM, 0.56 tonnes P205
(DP)P1	Plot 6	400 tonnes FYM, 2.7 tonnes P205	0.56 tonnes P205
(DP)P2	Plot 7	400 tonnes FYM, 2.7 tonnes P205	1.13 tonnes P205
(DP52)0	Plot 8	326 tonnes FYM, 4.3 tonnes P205 (until 1952 only)	None

3rd barley after potatoes or sugar beet (1974) tests in addition to 1:-

Sub plots

2. P205 72 Phosphate in 1970-72 (total P205 applied (kg)):

0	0 (2 sub plots/plot)
126	126
252	252
378	378

and some of the combinations of 2 with:-

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3. P205 746 Phosphate in 1974-76 (kg P205):

	1974	1975-6
0	None	None
63x3	63	63
189	189	None

Wheat (Maris Huntsman) after barley (1974-76) after potatoes (1973) and:  
Wheat (Cappelle) after barley (1974-76) after sugar beet (1973), test in addition to 1:

Sub plots

2. P205 71 Phosphate residues 1969-71 (total P205 applied (kg)):

	0 (2 sub plots/plot)
0	0
126	126
252	252
378	378

and some of the combinations of 2 with:-

3. P205 735 Phosphate in 1973-75 (kg P205):

	1973	1974, 75
0	None	None
63x3	63	63
189	189	None

Standard applications:

Winter wheat: Manures: K20 at 150 kg as muriate of potash. N at 50 kg at drilling as 'Nitro-Chalk'. N at 125 kg top-dressed in spring as 'Nitro-Chalk'.

Weedkillers: Ioxynil at 0.53 kg with mecoprop at 1.6 kg in 340 l.

Barley: Manures: K20 at 150 kg as muriate of potash. After barley (1975-76) after potatoes (1974): N at 94 kg as 'Nitro-Chalk' (N2). After barley (1975-76) after sugar beet (1974): N at 63 kg as 'Nitro-Chalk' (N1).

Weedkillers: Ioxynil at 0.42 kg with mecoprop at 1.3 kg in 340 l. Fungicide: Tridemorph at 0.53 kg applied with the weedkillers.

Seed: Winter wheat varieties sown at 200 kg.

Barley: Julia, dressed ethirimol, sown at 190 kg.

Cultivations, etc.: - K applied: 17 Aug, 1976. Ploughed: 6 Sept.

Winter wheat: Sown: 23 Nov. Spring N applied: 28 Apr, 1977. Weedkillers applied: 14 May. Harvested: 1 Sept.

Barley: Sown, N applied: 6 Apr. Weedkillers plus fungicide applied: 25 May. Harvested: 31 Aug.

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WINTER WHEAT (MARIS HUNTSMAN) AFTER BARLEY 1974-76 POTATOES 1973

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

RESIDUE	P205 735 P205 71	GRAIN TONNES/HECTARE			STRAW TONNES/HECTARE		
		0	63X3	189	0	63X3	189
(O)O	0	4.08	4.86		2.55	3.10	
(O)O	126			4.51			2.05
(O)O	252		5.72			3.81	
(O)O	378			5.11			2.57
(D)O	0	5.00		5.00	3.15		2.34
(D)O	126		6.33			3.43	
(D)O	252			5.47			2.59
(D)O	378		5.72			3.27	
(DP)O	0	6.06		6.35	3.29		3.78
(DP)O	126		6.81			4.60	
(DP)O	252			6.43			3.27
(DP)O	378		5.94			3.52	
(DP)D2	0	6.45	6.77		3.66	4.33	
(DP)D2	126			5.61			2.86
(DP)D2	252		6.91			3.77	
(DP)D2	378			6.43			3.66
(DP)D2P1	0	6.42		6.82	3.47		3.80
(DP)D2P1	126		5.97			3.52	
(DP)D2P1	252			6.69			4.06
(DP)D2P1	378		6.07			3.39	
(DP)P1	0	6.42		7.18	4.33		4.08
(DP)P1	126		6.33			3.81	
(DP)P1	252			6.67			4.29
(DP)P1	378		6.16			3.52	
(DP)P2	0	6.18	7.05		3.77	4.69	
(DP)P2	126			6.42			3.43
(DP)P2	252		7.03			4.00	
(DP)P2	378			6.67			3.75
(DP52)O	0	6.65	7.27		4.14	4.82	
(DP52)O	126			5.47			3.21
(DP52)O	252		6.42			3.79	
(DP52)O	378			6.52			4.70

GRAIN MEAN DM% 77.6

STRAW MEAN DM% 88.2

PLOT AREA HARVESTED 0.00077

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WINTER WHEAT (CAPPELLE) AFTER BARLEY 1974-6 SUGAR BEET 1973

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

		GRAIN TONNES/HECTARE			STRAW TONNES/HECTARE		
	P205 735	0	63X3	189	0	63X3	189
RESIDUE	P205 71						
	(O)0 0	2.86		3.82	2.33		2.98
	(O)0 126		5.15			3.80	
	(O)0 252			4.67			3.10
	(O)0 378		5.02			3.63	
	(D)0 0	3.68	4.30		2.88	2.83	
	(D)0 126			4.51			3.12
	(D)0 252		5.11			3.50	
	(D)0 378			5.02			3.51
	(DP)0 0	5.14	5.76		4.28	4.03	
	(DP)0 126			5.54			4.06
	(DP)0 252		5.66			3.30	
	(DP)0 378			5.88			4.19
	(DP)D2 0	6.21		6.12	3.81		4.66
	(DP)D2 126		6.74			4.61	
	(DP)D2 252			6.47			4.42
	(DP)D2 378		6.36			4.48	
	(DP)D2P1 0	6.86	6.35		4.81	4.85	
	(DP)D2P1 126			6.31			4.85
	(DP)D2P1 252		6.89			4.82	
	(DP)D2P1 378			6.35			4.02
	(DP)P1 0	6.27	6.33		4.83	4.56	
	(DP)P1 126			6.50			4.40
	(DP)P1 252		6.50			4.28	
	(DP)P1 378			6.33			4.70
	(DP)P2 0	5.87		6.24	4.16		4.19
	(DP)P2 126		6.11			4.04	
	(DP)P2 252			6.26			4.36
	(DP)P2 378		6.82			4.75	
	(DP52)0 0	6.47		6.02	4.42		3.97
	(DP52)0 126		5.87			4.82	
	(DP52)0 252			6.51			5.33
	(DP52)0 378		5.42			4.16	

GRAIN MEAN DM% 78.1

STRAW MEAN DM% 85.6

PLOT AREA HARVESTED 0.00077

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BARLEY AFTER BARLEY 1975-6 POTATOES 1974  
AND  
BARLEY AFTER BARLEY 1975-6 SUGAR BEET 1974

GRAIN TONNES/HECTARE

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

PREVIOUS CROP 1974		POTATOES(N2)		SUGAR BEET(N1)			
RESIDUE	P205 746 P205 72	0	63X3	189	0	63X3	189
(O)O	0	4.43		4.19	4.16	4.68	
(O)O	126		5.53				4.20
(O)O	252			4.55		4.80	
(O)O	373		4.77				4.54
(D)O	0	4.43	5.76		4.94		5.17
(D)O	126			4.65		5.42	
(D)O	252		5.00				5.27
(D)O	373			5.96		5.29	
(DP)O	0	5.13	5.23		5.06		5.27
(DP)O	126			5.61		5.79	
(DP)O	252		6.58				5.51
(DP)O	373			5.16		5.29	
(DP)D2	0	5.84		5.62	5.48	5.39	
(DP)D2	126		5.63				5.54
(DP)D2	252			6.48		5.79	
(DP)D2	373		5.85				5.55
(DP)D2P1	0	5.91	5.79		5.77		5.62
(DP)D2P1	126			5.91		5.68	
(DP)D2P1	252		6.20				6.28
(DP)D2P1	373			6.55		5.68	
(DP)P1	0	5.85	5.55		5.68		5.66
(DP)P1	126			5.03		5.79	
(DP)P1	252		6.55				5.94
(DP)P1	373			6.02		5.89	
(DP)P2	0	6.34		5.86	5.80	5.29	
(DP)P2	126		6.03				5.27
(DP)P2	252			5.89		5.91	
(DP)P2	373		5.55				5.91
(DP52)O	0	5.21		5.59	5.01	5.55	
(DP52)O	126		5.62				5.07
(DP52)O	252			5.71		5.28	
(DP52)O	373		6.11				5.54

GRAIN MEAN DM% (PREVIOUS CROP 1974 POTATOES) 79.7

GRAIN MEAN DM% (PREVIOUS CROP 1974 SUGAR BEET) 80.1

PLOT AREA HARVESTED 0.00077