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# Yields of the Field Experiments 1982

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## 82/S/RN/2 Rotation II - W. Wheat

### Rothamsted Research

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82/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 and of fresh dressings since - Saxmundham.

Sponsor: A.E. Johnston.

The 13th year of revised scheme, w. wheat.

For previous years see 'Details' 1967 and 1973, and 74-81/S/RN/2.

Whole plot dimensions: 5.49 x 39.8.

Treatments: From 1899-1964 the experiment tested farmyard manure and nitrogen and phosphate fertilizers 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, s. barley, sugar beet, s. barley - were grown until 1974. The whole experiment was sown to s. barley in 1975 and 1976, alternating w. wheat and s. barley from 1977 to 1979, alternating w. beans and w. wheat in 1980 and 1981, w. wheat alone in 1982. Combinations of the following treatments were tested after both beans and wheat:

Whole plots

1. RESIDUE

Residues of previous treatments:-

		Approximate total dressing 1899-1964	Total dressing 1965-1967
(O)O	Plot 1	None	None
(D)O	Plot 2	400 tonnes FYM	None
(DP)O	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)O	Plot 8	326 tonnes FYM, 4.3 tonnes P205 (until 1952 only)	None

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Sub plots

2. P Phosphate (total P2O5 applied in each period (kg)):

	1969-71	1973-75	1978*	1980*	1982*
(0)(0)0	0	0	0	0	0
(0)(3)0	0	378	0	0	0
(1)(3)1	126	378	120	120	120
(2)(3)1	252	378	120	120	120
(3)(3)0	378	378	0	0	0

\* Years shown are for wheat after wheat. Years for wheat after beans were 1979 and 1981 only.

and some of the combinations of 2 with:-

3. N Nitrogen fertilizer in spring (kg N) as 'Nitro-Chalk' in addition to 40 kg N at sowing:

80  
120  
160  
200

NOTE: Plots with the combinations of RESIDUE (DP)D2, (DP)D2P1, (DP)P1, (DP)P2 with P(3)(3)(0) were used for N15 studies, yields not taken.

Basal applications: Manures: K<sub>2</sub>O at 150 kg as muriate of potash.

Weedkillers: Isoproturon at 2.4 kg in 220 l. Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 220 l applied with the benomyl.

Fungicides: Benomyl at 0.42 kg. Carbendazim, maneb and tridemorph (as 'Cosmic' at 3.9 kg) in 220 l with captafol at 1.0 kg applied on two occasions, the second time with the insecticide. Insecticide: Pirimicarb at 0.14 kg.

Seed: Hustler, sown at 170 kg.

Cultivations, etc.:- K applied: 2 Sept, 1981. P applied: 3 Sept.

Ploughed: 10 Sept. Seed sown, isoproturon applied: 14 Oct. Mecoprop, bromoxynil and ioxynil with benomyl applied: 1 Apr, 1982. N applied: 14 Apr. 'Cosmic' with captafol applied: 28 May. 'Cosmic' with captafol and pirimicarb applied: 30 June. Combine harvested: 11 Aug.

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WHEAT AFTER WHEAT

GRAIN TONNES/HECTARE

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

RESIDUE	N P	80	120	160	200
(0)0	(0)(0)0			2.44	3.09
(0)0	(0)(3)0	4.37	3.07		
(0)0	(1)(3)1	4.29		6.49	
(0)0	(2)(3)1		6.59		7.03
(0)0	(3)(3)0		4.65		4.37
(D)0	(0)(0)0	4.25	6.82		
(D)0	(0)(3)0			6.01	5.24
(D)0	(1)(3)1		6.97		7.50
(D)0	(2)(3)1	5.75		7.52	
(D)0	(3)(3)0	5.83		5.85	
(DP)0	(0)(0)0			7.08	7.84
(DP)0	(0)(3)0	6.64	7.37		
(DP)0	(1)(3)1	7.28		8.05	
(DP)0	(2)(3)1		7.53		8.47
(DP)0	(3)(3)0		6.51		7.85
(DP)D2	(0)(0)0	7.41	7.64		
(DP)D2	(0)(3)0			8.90	7.63
(DP)D2	(1)(3)1	7.82		8.69	
(DP)D2	(2)(3)1		6.64		8.40
(DP)D2P1	(0)(0)0			7.43	8.21
(DP)D2P1	(0)(3)0	6.72	7.28		
(DP)D2P1	(1)(3)1	7.25		8.27	
(DP)D2P1	(2)(3)1		7.50		8.14
(DP)P1	(0)(0)0			8.67	9.13
(DP)P1	(0)(3)0	7.41	7.13		
(DP)P1	(1)(3)1		8.42		8.67
(DP)P1	(2)(3)1	7.23		9.31	
(DP)P2	(0)(0)0	6.69	7.26		
(DP)P2	(0)(3)0			8.66	8.39
(DP)P2	(1)(3)1		7.74		9.35
(DP)P2	(2)(3)1	8.03		8.27	
(DP52)0	(0)(0)0	6.60	7.24		
(DP52)0	(0)(3)0			8.06	9.33
(DP52)0	(1)(3)1		8.25		7.86
(DP52)0	(2)(3)1	7.06		8.32	
(DP52)0	(3)(3)0	6.93		7.83	

GRAIN MEAN DM% 83.5

PLOT AREA HARVESTED 0.00075



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WHEAT AFTER BEANS

GRAIN TONNES/HECTARE

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

RESIDUE	N P	80	120	160	200
(0)0	(0)(0)0	6.38	6.66		
(0)0	(0)(3)0			6.87	8.16
(0)0	(1)(3)1		8.98		9.73
(0)0	(2)(3)1	8.91		9.19	
(0)0	(3)(3)0	8.36		8.34	
(D)0	(0)(0)0			8.45	8.02
(D)0	(0)(3)0	9.28	9.28		
(D)0	(1)(3)1	9.67		9.92	
(D)0	(2)(3)1		10.31		10.37
(D)0	(3)(3)0		10.17		9.82
(DP)0	(0)(0)0	8.71	9.60		
(DP)0	(0)(3)0			10.26	10.24
(DP)0	(1)(3)1		10.51		9.55
(DP)0	(2)(3)1	10.10		10.44	
(DP)0	(3)(3)0	9.60		10.72	
(DP)D2	(0)(0)0			10.65	11.20
(DP)D2	(0)(3)0	10.08	10.37		
(DP)D2	(1)(3)1		10.42		10.79
(DP)D2	(2)(3)1	10.15		10.90	
(DP)D2P1	(0)(0)0	10.01	10.28		
(DP)D2P1	(0)(3)0			10.83	10.21
(DP)D2P1	(1)(3)1		10.33		11.04
(DP)D2P1	(2)(3)1	10.08		10.95	
(DP)P1	(0)(0)0	10.05	10.90		
(DP)P1	(0)(3)0			10.90	10.76
(DP)P1	(1)(3)1	9.96		10.97	
(DP)P1	(2)(3)1		10.99		11.17
(DP)P2	(0)(0)0			10.84	10.83
(DP)P2	(0)(3)0	9.73	9.82		
(DP)P2	(1)(3)1	9.14		10.90	
(DP)P2	(2)(3)1		10.60		10.99
(DP52)0	(0)(0)0			9.60	10.42
(DP52)0	(0)(3)0	9.10	9.96		
(DP52)0	(1)(3)1	9.44		10.63	
(DP52)0	(2)(3)1		10.51		10.37
(DP52)0	(3)(3)0		10.26		10.42

GRAIN MEAN DM% 87.5

PLOT AREA HARVESTED 0.00075