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Yields of the Field Experiments 1986

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86/R/SN/2 Rotation II - W. Wheat

Rothamsted Research

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86/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 17th year of revised scheme, w. wheat.

For previous years see 'Details' 1967 and 1973, and 74-85/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 and 1983, w. wheat and w. beans in 1984. Combinations of the following treatments were tested on first and second wheats after beans in 1984 and 1985:

Whole plots

1. RESIDUE Residues of previous treatments:-

		Approximate total dressing 1899-1964	Total dressing 1965-1967
(0)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

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Sub plots

2. P Phosphate (total P205 applied in each period (kg)):

	1969-71	1973-75	1978*	1980*	1982*	1984*
(0)(0)0	0	0	0	0	0	0
(0)(3)0	0	378	0	0	0	0
(1)(3)1	126	378	120	120	120	120
(2)(3)1	252	378	120	120	120	120
(3)(3)0	378	378	0	0	0	0

* 1978, 1980, 1982 and 1984 were the years of application for second wheat after beans. Years of application for first wheat after beans were 1979, 1981, 1983 and 1985.

and some of the combinations of 2 with:-

3. N Nitrogen fertilizer in spring (kg N) as 'Nitro-Chalk' (26% N) in addition to 45 kg N at sowing as prilled urea:

120
160
200
240

Basal applications: Manures: N at 45 kg as prilled urea. Weedkillers: Isoproturon at 2.5 kg in 220 l. Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 1.8 l), fluroxypyr at 0.14 kg applied with the prochloraz in 220 l. Fungicides: Prochloraz at 0.39 kg. Maneb at 1.6 kg, carbendazim at 0.15 kg and tridemorph at 0.37 kg with captafol at 1.0 kg applied with the insecticide in 220 l. Insecticide: Pirimicarb at 0.14 kg.

Seed: Galahad, sown at 400 seeds per square metre.

Cultivations, etc.:- Ploughed between 19 Sept, 1985 and 9 Oct, date not recorded. Power harrowed, seed sown, N applied: 9 Oct. Isoproturon applied: 10 Oct. N treatments applied: 30 Apr, 1986. Remaining weedkillers applied with the prochloraz: 7 May. Remaining fungicides applied with the insecticide: 8 July. Combine harvested: 4 Sept.

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86/S/RN/2

2ND WHEAT AFTER BEANS

GRAIN TONNES/HECTARE

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

RESIDUE	N P	120	160	200	240
(0)0	(0)(0)0			1.11	3.01
(0)0	(0)(3)0	3.67	1.30		
(0)0	(1)(3)1	6.12		6.65	
(0)0	(2)(3)1		7.20		5.09
(0)0	(3)(3)0		6.57		3.08
(D)0	(0)(0)0	2.59	6.57		
(D)0	(0)(3)0			4.89	4.57
(D)0	(1)(3)1		6.14		7.13
(D)0	(2)(3)1	7.42		5.55	
(D)0	(3)(3)0	5.30		5.31	
(DP)0	(0)(0)0			5.14	6.17
(DP)0	(0)(3)0	6.92	6.32		
(DP)0	(1)(3)1	6.81		7.96	
(DP)0	(2)(3)1		7.95		7.14
(DP)0	(3)(3)0		7.21		6.54
(DP)D2	(0)(0)0	7.52	7.74		
(DP)D2	(0)(3)0			8.20	6.86
(DP)D2	(1)(3)1	7.80		7.07	
(DP)D2	(2)(3)1		7.53		7.86
(DP)D2	(3)(3)0		6.91		7.70
(DP)D2P1	(0)(0)0			7.97	7.76
(DP)D2P1	(0)(3)0	7.59	8.16		
(DP)D2P1	(1)(3)1	7.79		8.02	
(DP)D2P1	(2)(3)1		8.55		8.61
(DP)D2P1	(3)(3)0		7.99		8.28
(DP)P1	(0)(0)0			7.92	8.40
(DP)P1	(0)(3)0	8.02	8.13		
(DP)P1	(1)(3)1		8.27		8.25
(DP)P1	(2)(3)1	7.99		8.14	
(DP)P1	(3)(3)0	7.29		7.51	
(DP)P2	(0)(0)0	7.67	7.80		
(DP)P2	(0)(3)0			8.21	8.14
(DP)P2	(1)(3)1		8.48		8.40
(DP)P2	(2)(3)1	7.70		8.46	
(DP)P2	(3)(3)0	7.56		7.76	
(DP52)0	(0)(0)0	6.82	7.55		
(DP52)0	(0)(3)0			7.89	7.24
(DP52)0	(1)(3)1		7.72		8.04
(DP52)0	(2)(3)1	7.43		7.13	
(DP52)0	(3)(3)0	7.41		7.56	

GRAIN MEAN DM% 79.5

SUB PLOT AREA HARVESTED 0.00075

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86/S/RN/2

1ST WHEAT AFTER BEANS

GRAIN TONNES/HECTARE

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

RESIDUE	N P	120	160	200	240
(0)0	(0)(0)0	6.51	5.61		
(0)0	(0)(3)0			4.74	7.41
(0)0	(1)(3)1		8.81		8.99
(0)0	(2)(3)1	8.27		9.67	
(0)0	(3)(3)0	7.31		8.03	
(D)0	(0)(0)0			7.30	6.16
(D)0	(0)(3)0	7.68	8.10		
(D)0	(1)(3)1	8.76		8.44	
(D)0	(2)(3)1		8.38		9.63
(D)0	(3)(3)0		8.41		7.54
(DP)0	(0)(0)0	8.78	8.68		
(DP)0	(0)(3)0			8.38	8.66
(DP)0	(1)(3)1		9.43		8.76
(DP)0	(2)(3)1	8.88		9.62	
(DP)0	(3)(3)0	8.15		9.08	
(DP)D2	(0)(0)0			10.48	9.05
(DP)D2	(0)(3)0	8.99	9.31		
(DP)D2	(1)(3)1		8.69		9.35
(DP)D2	(2)(3)1	9.12		9.56	
(DP)D2	(3)(3)0	9.34		8.37	
(DP)D2P1	(0)(0)0	9.23	8.85		
(DP)D2P1	(0)(3)0			8.93	9.55
(DP)D2P1	(1)(3)1		8.70		9.29
(DP)D2P1	(2)(3)1	9.08		8.92	
(DP)D2P1	(3)(3)0	9.37		9.38	
(DP)P1	(0)(0)0	9.54	8.66		
(DP)P1	(0)(3)0			9.35	8.69
(DP)P1	(1)(3)1	9.08		9.84	
(DP)P1	(2)(3)1		9.29		9.84
(DP)P1	(3)(3)0		9.20		9.22
(DP)P2	(0)(0)0			9.58	9.39
(DP)P2	(0)(3)0	9.23	9.18		
(DP)P2	(1)(3)1	9.15		9.46	
(DP)P2	(2)(3)1		9.32		9.42
(DP)P2	(3)(3)0		9.73		9.29
(DP52)0	(0)(0)0			8.81	8.66
(DP52)0	(0)(3)0	8.35	9.08		
(DP52)0	(1)(3)1	8.89		8.24	
(DP52)0	(2)(3)1		8.43		8.76
(DP52)0	(3)(3)0		8.52		7.49

GRAIN MEAN DM% 80.0

SUB PLOT AREA HARVESTED 0.00075

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