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Yields of the Field Experiments 1976

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76/S/RN/2 Rotation II - Barley

Rothamsted Research

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76/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 eighth year of revised scheme, barley.

For previous years see 'Details' 1967, 68/A/10(t), 69/S/RN/2(t) and 70-75/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 - and tests combinations of:

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 P2O5	None
(DP)D2	Plot 4	400 tonnes FYM, 2.7 tonnes P2O5	100 tonnes FYM
(DP)D2P1	Plot 5	400 tonnes FYM, 2.7 tonnes P2O5	100 tonnes FYM, 0.56 tonnes P2O5
(DP)P1	Plot 6	400 tonnes FYM, 2.7 tonnes P2O5	0.56 tonnes P2O5
(DP)P2	Plot 7	400 tonnes FYM, 2.7 tonnes P2O5	1.13 tonnes P2O5
(DP52)O	Plot 8	326 tonnes FYM, 4.3 tonnes P2O5 (until 1952 only)	None

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2nd barley after potatoes or sugar beet (1974) tests in addition to 1:-

Sub plots

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

(0)	None (2 sub plots/plot)
(126)	126
(252)	252
(378)	378

and some of the combinations of 2 with:-

3. P205 74-6 Phosphate in 1974, 75 and 76 (kg P205):

	1974	1975-6
(0)0	None	None
(63x2)63	63	63
(189)0	189	None

3rd barley after potatoes or sugar beet (1973) tests in addition to 1:-

Sub plots

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

(0)	None (2 sub plots/plot)
(126)	126
(252)	252
(378)	378

and some of the combinations of 2 with:-

3. P205 73-6 Phosphate in 1973, 74, 75 (kg P205) None in 1976:

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

Standard applications: All plots: Weedkillers: Dichlorprop plus MCPA ('Mephetol Plus' at 8.4 l in 340 l). Fungicide: Tridemorph at 0.53 kg applied with the weedkiller.

Second barley: Manures: (25:0:16) at 450 kg.

Third barley: Manures: K20 at 150 kg as muriate of potash.

After potatoes: N at 63 kg as 'Nitro-Chalk' (N1).

After sugar beet: N at 94 kg as 'Nitro-Chalk' (N2).

Seed: Julia, dressed with ethirimol, sown at 190 kg.

Cultivations, etc.: - K applied: 29 Sept, 1975. Ploughed: 6 Oct. Test P applied: 4 Mar, 1976. Seed sown, NK applied to second barley, N applied to third barley: 15 Mar. Weedkiller and fungicide applied: 13 May. Combine harvested: 19 July.

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BARLEY AFTER BARLEY 1975 POTATOES 1974

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

RESIDUE	P20574 6 P205(72)	GRAIN TONNES/HECTARE			STRAW TONNES/HECTARE		
		(0)0	(63X2)63	⁽¹⁸⁹⁾⁰ 189(0)	(0)0	(63X2)63	⁽¹⁸⁹⁾⁰ 189(0)
(0)0	(0)	1.83		3.05	1.09		1.52
(0)0	(126)		2.82			1.47	
(0)0	(252)			2.25			1.09
(0)0	(378)		3.30			1.38	
(D)0	(0)	2.93	2.58		1.57	1.33	
(D)0	(126)			2.81			1.71
(D)0	(252)		3.14			1.61	
(D)0	(378)			3.02			1.66
(DP)0	(0)	3.09	3.57		1.61	1.85	
(DP)0	(126)			3.12			1.95
(DP)0	(252)		3.76			1.90	
(DP)0	(378)			3.41			1.71
(DP)D2	(0)	3.53		3.69	2.09		1.99
(DP)D2	(126)		4.18			2.18	
(DP)D2	(252)			4.34			2.23
(DP)D2	(378)		4.38			2.14	
(DP)D2P1	(0)	3.91	3.94		2.18	1.95	
(DP)D2P1	(126)			3.75			2.04
(DP)D2P1	(252)		4.32			2.28	
(DP)D2P1	(378)			4.40			2.37
(DP)P1	(0)	4.91	4.40		2.66	2.33	
(DP)P1	(126)			4.25			2.04
(DP)P1	(252)		4.25			2.33	
(DP)P1	(378)			4.29			2.37
(DP)P2	(0)	4.57		4.60	2.28		2.47
(DP)P2	(126)		4.36			2.33	
(DP)P2	(252)			4.41			2.33
(DP)P2	(378)		4.25			2.23	
(DP52)0	(0)	3.61		3.30	1.71		1.95
(DP52)0	(126)		3.84			2.37	
(DP52)0	(252)			4.03			1.80
(DP52)0	(378)		4.28			1.90	

GRAIN MEAN DM% 83.3

STRAW MEAN DM% 61.8

PLOT AREA HARVESTED 0.00077

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BARLEY AFTER BARLEY 1975 SUGAR BEET 1974

GRAIN TONNES/HECTARE

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

RESIDUE	P20574 6 P205(72)	GRAIN TONNES/HECTARE			STRAW TONNES/HECTARE		
		(0)0	(63X2)63	189(0)	(0)0	(63X2)63	189(0)
(0)0	(0)	2.17	3.27		1.07	1.59	
(0)0	(126)			2.96			1.69
(0)0	(252)		2.49		0.97		
(0)0	(378)			3.19			1.68
(D)0	(0)	2.85		3.68	1.89		2.35
(D)0	(126)		3.52			1.89	
(D)0	(252)			3.65			1.84
(D)0	(378)		3.78		2.05		
(DP)0	(0)	3.61		3.47	2.15		1.84
(DP)0	(126)		4.00			2.25	
(DP)0	(252)			4.37			2.25
(DP)0	(378)		3.42		1.79		
(DP)D2	(0)	4.40	3.61		2.25	1.84	
(DP)D2	(126)			3.96			1.99
(DP)D2	(252)		3.93		2.30		
(DP)D2	(378)			3.74			2.05
(DP)D2P1	(0)	3.39		4.18	1.84		2.25
(DP)D2P1	(126)		4.32			2.35	
(DP)D2P1	(252)			4.05			2.25
(DP)D2P1	(378)		3.64		1.99		
(DP)P1	(0)	4.30		4.10	2.30		2.05
(DP)P1	(126)		4.35			2.46	
(DP)P1	(252)			4.56			2.66
(DP)P1	(378)		4.49			2.46	
(DP)P2	(0)	3.92	4.34		2.15	2.10	
(DP)P2	(126)			4.02			1.94
(DP)P2	(252)		4.36			2.40	
(DP)P2	(378)			4.19			2.40
(DP52)0	(0)	3.47	4.08		1.69	1.94	
(DP52)0	(126)			4.64			2.05
(DP52)0	(252)		3.32		1.69		
(DP52)0	(378)			3.95			1.74

GRAIN MEAN DM% 83.4

STRAW MEAN DM% 66.6

PLOT AREA HARVESTED 0.00077

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BARLEY GIVEN N1 AFTER BARLEY 1974-5 POTATOES 1973
AND
BARLEY GIVEN N2 AFTER BARLEY 1974-5 SUGARBEET 1973

GRAIN TONNES/HECTARE

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

PREVIOUS CROP 1973		POTATOES			SUGAR BEET		
	P20573 6 P205(71)	(0)0	(63X3)0	189(0)	(0)0	(63X3)0	189(0)
RESIDUE	(0)0 (0)	1.10	2.71		1.04		1.20
	(0)0 (126)			2.15		2.39	
	(0)0 (252)		2.84				2.38
	(0)0 (378)			2.71		2.99	
	(D)0 (0)	2.02		2.67	1.79	2.38	
	(D)0 (126)		2.39				2.66
	(D)0 (252)			2.52		3.27	
	(D)0 (378)		2.81				2.99
	(DP)0 (0)	3.49		3.16	3.14	3.64	
	(DP)0 (126)		3.65				3.60
	(DP)0 (252)			3.61		3.06	
	(DP)0 (378)		2.92				3.29
	(DP)D2 (0)	3.82	3.71		3.73		4.16
	(DP)D2 (126)			3.69		4.23	
	(DP)D2 (252)		3.49				4.58
	(DP)D2 (378)			3.05		4.32	
	(DP)D2P1 (0)	4.06		3.48	4.75	4.24	
	(DP)D2P1 (126)		3.89				4.18
	(DP)D2P1 (252)			3.74		4.58	
	(DP)D2P1 (378)		3.06				4.20
	(DP)P1 (0)	3.89		3.77	4.01	4.40	
	(DP)P1 (126)		3.79				4.59
	(DP)P1 (252)			3.99		4.33	
	(DP)P1 (378)		3.71				4.38
	(DP)P2 (0)	3.22	3.80		4.31		4.40
	(DP)P2 (126)			3.57		3.97	
	(DP)P2 (252)		4.06				3.61
	(DP)P2 (378)			3.68		4.52	
	(DP52)0 (0)	3.71	3.41		4.09		4.34
	(DP52)0 (126)			2.70		4.37	
	(DP52)0 (252)		3.74				4.95
	(DP52)0 (378)			3.94		4.05	

GRAIN MEAN DM% (PREVIOUS CROP 1973 POTATOES) 84.6

GRAIN MEAN DM% (PREVIOUS CROP 1973 SUGAR BEET) 84.1

PLOT AREA HARVESTED 0.00077