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Yields of the Field Experiments 1975

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75/ R/AG/6 - Agdell - Potatoes, Sugar Beet, Barley

Rothamsted Research

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75/R/AG/6

AGDELL

Object: To study, by crop yields and soil analyses, the residual values of phosphate and potash applied in the period 1848-1951 and further dressings since 1964.

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

For previous years see 'Details' 1967, 68/A/4, 69/R/AG/6, 70/R/AG/6(t), 71/R/AG/6(t), 72/R/AG/6(t) and 73-74/R/AG/6.

Treatments: All combinations of:-

Whole plots: 1. Fertilisers and organic manures applied to roots every fourth year, in the period 1848-1948 OLDRESD

None	NONE
P K Na Mg	PKNAMG
N P K Na Mg C	NPKNAMGC

N: 48 kg N as sulphate of ammonia
 P: 41 kg P as superphosphate
 K: 224 kg K as sulphate of potash
 Na: 16 kg Na as sulphate of soda
 Mg: 11 kg Mg as sulphate of magnesia
 C: Castor meal at 2240 kg supplying about 112 kg N

2. Rotation 1848-1951 OLDROTN

With fallow: Roots (turnips or swedes), barley, fallow, wheat FALLOW
 With legume: Roots, barley, legume (clover or beans), wheat LEGUME

Half plots: 3. Residues of 1964 treatments 1964RESD

P	P
K	K

Quarter plots: 4. Previous cropping 1958-69 on P-test half plots, 1958-70 on K-test half plots PREVCROP

Arable or fallow	ARABLE
Grass	GRASS

Sixteenth plots: 5. Rates of 1964 treatments (kg) P2C564 K2C64

P2O5 to P-test half plots	K2O to K-test half plots		
None	None	0	0
500	315	500	315
1000	630	1000	630
2000	1260	2000	1260

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Sixty fourth plots:

6. On P-test half plots:	On K-test half plots:	P205(70-2)	K2075		
Residuals of P205	K20 applied 1975 (kg)				
applied 1970-72	(cumulative to dress-				
(total, kg)	ings in 1973-74)			Barley	Potatoes
To barley	To potatoes	To sugar beet			S.Beet
None	None	None	0	0	0
375	250	310	375	250	310

Strips of sixty fourth plots:

7. On P-test half plots:	On K-test half plots:	N75	CROP
N (kg) to barley 1975	Crops in 1975		
63	Potatoes	63	Potatoes
94	Sugar beet	94	Sugar beet

Sub plot dimensions: Plots 1, 2, 3 and 4 - 6.04 x 3.02. Plots 5, 6 - 5.43 x 3.02.

Standard applications:

Barley: Manures: K2O at 130 kg as muriate of potash. Weedkillers: Dicamba with mecoprop and MCPA ('Tetralex Plus' at 4.2 l in 280 l).
 Potatoes: Manures: N at 250 kg as 'Nitro-Chalk', P205 at 190 kg as superphosphate, MgO at 100 kg as kieserite. Weedkillers: Linuron at 1.1 kg with paraquat at 0.42 kg ion in 280 l. Insecticide: Menazon at 0.28 kg in 280 l twice. Fungicide: Mancozeb at 1.3 kg applied with second insecticide spray.
 Sugar beet: Manures: N at 190 kg as 'Nitro-Chalk'. P205 at 130 kg as superphosphate. MgO at 100 kg as kieserite. Insecticide: Menazon at 0.28 kg in 280 l on three occasions.

Seed: Barley: Julia, dressed with ethirimol, sown at 170 kg.
 Potatoes: King Edward, once grown Rothamsted seed.
 Sugar beet: Klein E, sown at 13 kg.

Cultivations, etc.:-

All plots: Ploughed: 9 Dec, 1974. Spring-tine cultivated and power harrowed: 29 Apr, 1975.
 Barley: K applied: 5 Nov, 1974. Seed sown and N applied: 30 Apr. Weedkiller applied: 13 June. Combine harvested: 15 Aug.
 Potatoes: Standard N, P, Mg and test K applied: 1 May, 1975, spike rotary cultivated and potatoes planted: 12 May. Weedkillers applied: 4 June. Insecticide applied: 30 June, and with fungicide: 18 July. Lifted: 23 Sept.
 Sugar beet: Standard N, P, Mg and treatment K applied: 1 May, 1975. Power harrowed and seed sown: 2 May. Insecticide applied: 17 June, 30 June, 18 July. Lifted: 16 Oct.

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P-TEST HALF PLOTS

BARLEY

GRAIN TONNES/HECTARE

*** TABLES OF MEANS ***

PREVCROP ARABLE

		OLDRES D	NONE		PKNAMG	NPKNAMGC		
		OLDROTN	FALLOW	LEGUME	FALLOW	LEGUME	FALLOW	LEGUME
P20570	2	N74						
0	0	63	2.90	3.28	4.45	2.52	2.56	3.04
		94	2.29	3.05	4.67	3.75	3.50	2.36
	500	63	2.29	3.34	4.19	3.00	3.27	2.75
		94	3.45	2.49	4.16	4.03	3.72	2.65
	1000	63	3.70	4.05	4.56	4.22	2.20	3.53
		94	3.72	3.59	4.82	3.95	3.55	3.25
	2000	63	3.12	4.32	4.18	3.68	3.63	3.43
		94	3.15	4.77	4.53	3.72	4.16	3.67
375	0	63	2.46	4.02	4.34	3.00	3.31	3.02
		94	2.15	4.29	4.79	3.80	3.75	3.04
	500	63	3.40	3.64	4.30	3.11	3.76	3.42
		94	3.78	2.89	4.56	4.28	4.13	3.21
	1000	63	4.26	3.59	4.63	4.57	2.90	3.77
		94	4.29	3.83	4.64	4.33	3.88	3.90
	2000	63	3.24	4.25	4.56	3.70	3.28	3.08
		94	3.14	4.57	5.06	4.08	3.56	3.47

PREVCROP GRASS

		OLDRES D	NONE		PKNAMG	NPKNAMGC		
		OLDROTN	FALLOW	LEGUME	FALLOW	LEGUME	FALLOW	LEGUME
P20570	2	N74						
0	0	63	2.31	1.93	0.72	2.10	3.21	2.05
		94	2.43	1.27	3.11	3.10	3.40	2.53
	500	63	3.30	3.59	3.92	2.09	3.16	3.37
		94	3.28	3.66	3.81	2.16	3.95	3.96
	1000	63	4.07	3.43	2.87	3.50	3.32	3.73
		94	3.82	3.27	3.85	4.13	4.23	4.17
	2000	63	4.14	4.43	4.55	3.10	4.11	3.93
		94	4.70	4.75	4.97	3.16	4.37	4.12
375	0	63	3.48	3.42	2.51	2.50	3.47	3.02
		94	3.23	3.21	3.71	3.60	3.76	3.08
	500	63	3.70	4.26	4.13	3.19	3.66	3.54
		94	2.95	3.80	4.67	2.62	4.47	3.90
	1000	63	3.90	4.15	2.61	3.51	3.97	3.98
		94	4.57	3.72	4.52	4.32	4.36	4.56
	2000	63	4.28	4.51	4.54	2.36	3.74	4.38
		94	4.92	4.48	4.90	2.88	4.47	4.33

GRAIN MEAN DM% 84.9

PLOT AREA HARVESTED 0.00085

75/R/AG/6

K-TEST HALF PLOTS

POTATOES

TOTAL TUBERS TONNES/HECTARE

*** TABLES OF MEANS ***

PREVCROP ARABLE

	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROT N	FALLOW		FALLOW	LEGUME	FALLOW	
K2075	K2064						
0	0	7.8	7.2	11.9	9.9	10.6	8.9
	315	5.5	8.3	11.2	12.3	7.0	11.3
	630	10.9	8.2	9.4	9.8	8.4	9.0
	1260	8.2	7.5	9.8	11.4	13.4	14.6
250	0	10.3	11.5	9.6	11.9	8.1	12.4
	315	9.8	8.4	13.7	13.6	10.4	9.2
	630	9.0	9.8	10.4	12.6	10.5	12.1
	1260	11.6	12.5	9.1	12.2	13.1	12.1

PREVCROP GRASS

	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROT N	FALLOW		FALLOW	LEGUME	FALLOW	
K2075	K2064						
0	0	3.5	2.5	3.9	5.4	3.2	4.9
	315	7.1	2.3	8.3	9.9	7.8	6.9
	630	7.3	6.3	10.5	9.8	9.5	10.5
	1260	6.7	2.4	14.2	12.2	7.9	11.6
250	0	10.9	8.0	13.2	13.7	8.4	9.6
	315	11.2	4.5	12.3	14.1	12.6	12.3
	630	12.6	9.1	11.1	11.9	8.9	12.7
	1260	13.3	3.9	9.0	15.0	12.5	13.5

75/R/AG/6

K-TEST HALF PLOTS

POTATOES

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

*** TABLES OF MEANS ***

PREVCRCP ARABLE

	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROTN	FALLOW		FALLOW	LEGUME	FALLOW	
K2075	K2064						
0	0	72.3	58.5	77.0	66.5	61.0	61.6
	315	62.2	66.9	76.6	68.6	47.9	67.7
	630	71.8	64.2	67.3	71.9	67.5	55.7
	1260	70.9	74.4	70.6	72.8	68.6	65.8
250	0	77.0	76.7	69.0	74.4	45.6	68.4
	315	64.1	62.2	76.4	69.6	48.9	59.1
	630	55.2	68.6	64.7	70.3	60.6	70.5
	1260	81.5	64.4	70.7	68.0	67.6	71.0

PREVCRCP GRASS

	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROTN	FALLOW		FALLOW	LEGUME	FALLOW	
K2075	K2064						
0	0	41.2	50.7	26.2	40.7	16.1	46.0
	315	77.1	67.2	73.3	64.0	57.9	57.5
	630	69.6	62.9	68.0	67.1	56.0	60.9
	1260	56.2	64.1	76.5	67.8	58.7	72.2
250	0	76.3	70.5	75.2	66.6	59.5	70.0
	315	69.8	72.1	75.7	65.4	70.2	74.8
	630	77.7	68.8	67.0	74.8	52.7	72.9
	1260	75.8	92.7	66.7	70.7	73.1	64.8

SUB PLOT AREA HARVESTED 0.00069

75/R/AG/6

K-TEST HALF PLOTS

SUGAR BEET

ROOTS (WASHED) TONNES/HECTARE

*** TABLES OF MEANS ***

PREVCROP ARABLE

K2075	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROT N	FALLOW		FALLOW	LEGUME	FALLOW	
0	K2064						
	0	14.5	14.8	15.7	19.3	15.4	17.1
	315	15.7	16.0	17.7	16.6	20.3	17.9
	630	14.8	16.9	18.6	19.3	19.2	17.5
310	1260	18.5	15.2	19.5	18.8	16.7	20.6
	0	16.3	17.2	20.1	21.2	18.8	18.6
	315	15.8	18.6	19.9	20.2	17.5	18.8
	630	17.8	20.9	21.4	20.5	18.6	18.5
	1260	16.7	17.6	21.5	20.8	14.5	20.6

PREVCROP GRASS

K2075	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROT N	FALLOW		FALLOW	LEGUME	FALLOW	
0	K2064						
	0	11.8	16.0	11.4	17.1	13.7	15.8
	315	17.5	14.3	16.2	18.4	16.0	15.0
	630	13.9	17.8	17.3	19.9	17.6	17.9
310	1260	16.3	14.5	16.8	18.1	19.7	17.1
	0	17.5	16.9	17.6	20.5	17.0	15.1
	315	19.5	15.4	18.0	23.4	19.4	19.8
	630	13.6	19.4	20.3	19.8	19.3	17.3
	1260	17.2	17.5	17.5	22.5	21.6	22.7

75/R/AG/6

K-TEST HALF PLOTS

SUGAR BEET

SUGAR PERCENTAGE

*** TABLES OF MEANS ***

PREWCROP ARABLE

	OLDRES D OLDROTN	NONE FALLOW	LEGUME	PKNAMG FALLOW	NPKNAMGC		LEGUME
K2075	K2064				LEGUME	FALLOW	
0	0	13.8	14.2	14.9	14.4	13.8	14.6
	315	13.9	14.0	14.5	14.6	14.2	15.1
	630	14.7	14.4	15.1	14.8	14.5	15.3
	1260	15.1	14.2	15.0	14.7	14.7	14.7
310	0	14.7	14.7	15.0	14.7	14.6	15.3
	315	14.7	14.4	15.1	15.0	14.4	15.4
	630	14.5	14.4	14.9	14.9	14.7	15.1
	1260	14.9	14.2	15.2	14.8	14.3	15.3

PREWCROP GRASS

	OLDRES D OLDROTN	NONE FALLOW	LEGUME	PKNAMG FALLOW	NPKNAMGC		LEGUME
K2075	K2064				LEGUME	FALLOW	
0	0	13.4	12.7	13.3	13.5	13.3	12.8
	315	13.2	14.1	14.5	13.8	13.2	13.8
	630	13.6	13.6	13.5	14.1	14.0	14.0
	1260	14.2	14.2	14.5	14.1	14.6	14.6
310	0	14.1	14.2	14.4	14.4	14.2	14.8
	315	14.3	13.9	14.6	14.4	14.4	15.0
	630	13.8	14.1	14.8	14.4	14.2	14.4
	1260	14.7	14.9	14.6	14.9	14.6	15.1

75/R/AG/3

K-TEST HALF PLOTS

SUGAR BEET

TOTAL SUGAR TONNES/HECTARE

*** TABLES OF MEANS ***

PREVCROP ARABLE

	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROTN	FALLOW		FALLOW	LEGUME	FALLOW	
K2075	K2064						
0	0	2.00	2.10	2.33	2.78	2.13	2.50
	315	2.18	2.23	2.57	2.42	2.89	2.70
	630	2.17	2.42	2.82	2.85	2.78	2.67
	1260	2.79	2.16	2.92	2.77	2.46	3.02
310	0	2.39	2.52	3.00	3.12	2.73	2.85
	315	2.32	2.68	3.01	3.04	2.52	2.89
	630	2.58	3.00	3.19	3.05	2.74	2.80
	1260	2.49	2.50	3.26	3.08	2.07	3.15

PREVCROP GRASS

	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROTN	FALLOW		FALLOW	LEGUME	FALLOW	
K2075	K2064						
0	0	1.58	2.03	1.52	2.31	1.83	2.03
	315	2.31	2.02	2.35	2.54	2.12	2.07
	630	1.89	2.42	2.34	2.82	2.47	2.50
	1260	2.31	2.06	2.44	2.56	2.87	2.50
310	0	2.47	2.39	2.54	2.94	2.41	2.24
	315	2.79	2.14	2.63	3.37	2.80	2.96
	630	1.87	2.73	3.01	2.85	2.75	2.49
	1260	2.52	2.60	2.56	3.36	3.15	3.41

75/R/AG/6

K-TEST HALF PLOTS

SUGAR BEET

TOPS TONNES/HECTARE

*** TABLES OF MEANS ***

PREVCROP ARABLE

K2075	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROTN	FALLOW		FALLOW	LEGUME	FALLOW	
	K2064						
0	0	15.3	19.2	17.0	16.7	14.0	18.8
	315	15.5	16.4	16.0	15.9	17.5	15.3
	630	14.1	15.7	15.1	18.0	16.3	16.8
	1260	12.9	15.4	18.9	17.7	14.5	19.0
310	0	12.1	17.8	18.3	18.8	15.7	22.4
	315	15.8	16.3	16.6	21.5	17.7	16.6
	630	20.1	20.3	19.3	19.8	19.0	18.3
	1260	15.2	16.9	19.5	17.5	17.1	19.7

PREVCROP GRASS

K2075	OLDRES D	NONE	LEGUME	PKNAMG	NPKNAMGC		LEGUME
	OLDROTN	FALLOW		FALLOW	LEGUME	FALLOW	
	K2064						
0	0	18.8	20.9	20.8	27.2	21.9	25.9
	315	19.4	12.7	19.4	22.9	24.2	23.8
	630	15.8	19.8	22.3	22.0	18.3	20.1
	1260	13.9	14.3	17.9	19.4	19.5	18.9
310	0	19.4	20.6	22.0	23.6	19.9	20.1
	315	20.0	14.2	20.3	24.1	24.1	23.9
	630	13.8	18.3	20.3	21.9	21.5	20.2
	1260	14.9	18.6	21.2	23.0	21.9	22.8

SUB PLOT AREA HARVESTED 0.00077