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# Yields of the Field Experiments 1972

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## 72/R/AG/6 Agdell - Potatoes, Sugar Beet, Oats

### Rothamsted Research

Rothamsted Research (1973) *72/R/AG/6 Agdell - Potatoes, Sugar Beet, Oats ; Yields Of The Field Experiments 1972*, pp 24 - 33 - DOI: <https://doi.org/10.23637/ERADOC-1-62>

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AGDELL

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

The third year of revised scheme. Crops, potatoes, sugar beet, oats.

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

Sub-plot dimensions:

Oats: Plots 1, 2, 3, 4 - 12.1 x 6.04. Plots 5, 6 - 10.9 x 6.04.

Potatoes, sugar beet: Plots 1, 2, 3, 4 - 6.04 x 3.02. Plots 5, 6 - 5.43 x 3.02.

Area harvested: Sugar beet: 0.00077, potatoes: 0.00069, oats: 0.00244.

Rotation (P test) plots continued in potatoes and sugar beet. Plots fallowed in 1971 (K test) were sown to spring oats.

Standard applications:

Potatoes: Manures: 250 kg N, 250 kg K<sub>2</sub>O, 100 kg MgO as 'Nitro-Chalk', muriate of potash and kieserite. Weedkillers: Linuron at 0.84 kg plus paraquat at 0.42 kg ion in 450 l. Insecticide: Menazon at 0.22 kg in 340 l. Fungicide: Mancozeb at 1.3 kg in 340 l.

Sugar beet: Manures: 190 kg N, 310 kg K<sub>2</sub>O, 100 kg MgO as 'Nitro-Chalk', muriate of potash and kieserite. Insecticides: Pyrethrum ('Py' at 2.1 l in 340 l). Menazon at 0.22 kg in 340 l.

Oats: Manures: 75 kg N, 33 kg P<sub>2</sub>O<sub>5</sub> as (30:13:0). Weedkillers: Bromoxynil, ioxynil, dichlorprop and MCPA ('Tetroxone' at 5.6 l in 220 l).

Seeds: Potatoes: King Edward.

Sugar beet: Klein E, sown at 5.6 kg.

Oats: Manod, sown at 210 kg.

Cultivations, etc.: - All plots ploughed: 8 Oct, 1971.

Potatoes: Test P, basal N, K and Mg applied: 28 Mar, 1972. Rotary cultivated: 24 Apr. Planted: 25 Apr. Weedkiller applied:

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22 May. Insecticide applied: 22 June, 13 July. Fungicide applied: 13 July, 1 Aug. Lifted: 10 - 12 Oct.  
Sugar beet: Test P, basal N, K and Mg applied: 29 Mar, 1972.  
Power harrowed: 17 Apr. Drilled: 18 Apr. Singled: 5 - 6 June.  
Pyrethrum applied: 11 May. Menazon applied: 22 June, 13 July, 1 Aug. Lifted: 16 - 20 Oct.  
Oats: Basal NP applied, seed drilled: 23 Mar, 1972. Weedkiller applied: 18 May. Combine harvested: 31 Aug.

NOTE: Green crop samples of oats were taken in July for determination of total dry matter.

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TABLES OF MEANS

SUGAR BEET

ROOTS (WASHED): TONNES/HECTARE

1848 - 1951

		None		PK Plot		NPK		Mean
		5	6	3	4	1	2	
P		Previous cropping 1958-69, Arable or fallow						
1964	1970-72							
0	0	36.5	28.4	44.0	31.3	34.7	45.6	36.8
1	0	37.3	32.5	42.3	37.3	38.8	38.1	37.7
2	0	35.4	40.5	38.6	41.7	39.6	42.7	39.7
4	0	37.9	33.7	43.6	40.6	37.5	39.0	38.7
0	1	36.4	40.8	44.8	36.8	34.9	44.5	39.7
1	1	37.7	38.6	42.7	40.9	29.4	41.2	38.4
2	1	34.9	42.9	39.7	39.6	36.0	41.0	39.0
4	1	42.0	38.8	38.3	42.5	38.8	39.9	40.0
Mean		37.3	37.0	41.8	38.8	36.2	41.5	38.8
P		Previous cropping 1958-69, Grass						
1964-69	1970-72							
0	0	17.0	8.0	25.4	14.0	34.9	24.1	20.6
1	0	33.6	37.1	41.7	35.5	41.8	41.9	38.6
2	0	39.9	39.6	40.1	39.3	37.4	40.1	39.4
4	0	36.7	40.1	42.6	37.3	34.6	40.4	38.6
0	1	35.5	38.3	42.3	37.4	37.4	36.5	37.9
1	1	36.7	40.4	42.3	32.6	41.4	41.7	39.2
2	1	34.9	43.8	39.9	33.7	37.8	41.2	38.5
4	1	40.5	38.9	39.9	32.1	41.4	38.1	38.5
Mean		34.4	35.8	39.3	32.7	38.3	38.0	36.4

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SUGAR BEET

SUGAR PERCENTAGE

1848 - 1951

		None		PK Plot		NPK		Mean
		5	6	3	4	1	2	
P		Previous cropping 1958-69, Arable or fallow						
1964	1970-72							
0	0	18.2	16.8	18.1	17.8	17.5	17.3	17.6
1	0	18.5	18.3	18.8	18.8	18.5	18.3	18.5
2	0	17.7	18.1	18.7	18.3	18.6	18.1	18.3
4	0	17.8	17.6	18.1	18.3	18.4	18.2	18.1
0	1	18.7	18.0	18.7	19.0	17.7	18.2	18.4
1	1	18.2	18.5	18.5	19.0	17.5	18.4	18.4
2	1	18.3	18.1	17.7	17.4	18.2	17.7	17.9
4	1	18.4	18.1	18.3	18.5	18.1	18.0	18.2
Mean		18.2	17.9	18.4	18.4	18.1	18.0	18.2
P		Previous cropping 1958-69, Grass						
1964-69	1970-72							
0	0	17.6	17.8	17.2	18.1	17.6	16.4	17.4
1	0	18.1	17.8	18.0	17.6	17.5	17.2	17.7
2	0	17.8	17.7	18.0	17.6	17.5	16.8	17.6
4	0	18.0	17.7	18.2	17.0	17.6	17.6	17.7
0	1	18.0	17.7	18.0	18.1	18.0	17.8	17.9
1	1	18.0	17.8	17.4	18.3	18.3	17.6	17.9
2	1	18.0	17.8	18.1	17.8	18.7	17.8	18.1
4	1	17.9	17.3	17.8	17.5	17.9	18.1	17.8
Mean		17.9	17.7	17.8	17.7	17.9	17.4	17.8

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SUGAR BEET

TOTAL SUGAR: TONNES/HECTARE

1848 - 1951

		None		PK Plot		NPK		Mean	
		5	6	3	4	1	2		
P		Previous cropping 1958-69, Arable or fallow							
1964	1970-72								
0	0	6.64	4.77	7.95	5.57	6.08	7.89	6.48	
1	0	6.90	5.95	7.95	7.00	7.18	6.98	6.99	
2	0	6.24	7.36	7.22	7.61	7.37	7.74	7.26	
4	0	6.73	5.95	7.91	7.45	6.89	7.10	7.01	
0	1	6.82	7.36	8.35	6.98	6.20	8.09	7.30	
1	1	6.86	7.14	7.91	7.76	5.15	7.57	7.07	
2	1	6.40	7.76	7.05	6.91	6.55	7.28	6.99	
4	1	7.74	7.02	7.02	7.86	7.01	7.17	7.30	
Mean		6.79	6.66	7.67	7.14	6.55	7.48	7.05	
P		Previous cropping 1958-69, Grass							
1964-69	1970-72								
0	0	2.99	1.42	4.37	2.53	6.16	3.94	3.57	
1	0	6.07	6.60	7.52	6.25	7.31	7.23	6.83	
2	0	7.10	7.03	7.23	6.93	6.56	6.76	6.93	
4	0	6.62	7.12	7.73	6.32	6.10	7.10	6.83	
0	1	6.38	6.77	7.64	6.76	6.72	6.49	6.79	
1	1	6.60	7.19	7.35	5.96	7.57	7.33	7.00	
2	1	6.29	7.78	7.22	6.01	7.08	7.33	6.95	
4	1	7.26	6.73	7.10	5.62	7.42	6.89	6.84	
Mean		6.16	6.33	7.02	5.80	6.87	6.63	6.47	

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SUGAR BEET

TOPS: TONNES/HECTARE

1848 - 1951

		None		PK Plot		NPK		Mean
		5	6	3	4	2	1	
P		Previous cropping 1958-69, Arable or fallow						
1964	1970-72							
0	0	40.3	40.3	44.0	38.2	45.8	56.4	44.1
1	0	38.2	34.2	40.5	36.4	37.6	48.7	39.3
2	0	38.2	49.7	39.9	47.0	45.8	44.0	44.1
4	0	53.0	46.3	52.8	45.8	41.1	47.6	47.8
0	1	40.9	45.6	42.3	35.8	45.8	51.1	43.6
1	1	41.6	39.6	47.6	43.4	42.9	44.0	43.2
2	1	44.3	47.0	47.6	50.5	44.6	55.8	48.3
4	1	45.0	42.3	44.6	43.4	47.0	48.1	45.1
Mean		42.7	43.1	44.9	42.6	43.8	49.5	44.4
P		Previous cropping 1958-69, Grass						
1964-69	1970-72							
0	0	18.8	11.4	32.3	18.2	45.2	38.2	27.3
1	0	42.9	48.3	47.0	45.8	49.9	52.3	47.7
2	0	42.9	53.0	55.8	39.3	47.0	59.9	49.7
4	0	47.0	48.3	48.7	47.6	51.1	51.1	49.0
0	1	51.0	57.0	54.0	44.6	51.1	51.7	51.6
1	1	39.6	55.0	52.8	39.9	54.6	59.9	50.3
2	1	49.7	53.0	51.7	35.8	47.0	53.4	48.4
4	1	47.0	51.0	45.8	36.4	49.3	47.6	46.2
Mean		42.4	47.1	48.5	38.5	49.4	51.7	46.3

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SUGAR BEET

PLANT NUMBER: THOUSANDS/HECTARE

1848 - 1951

		None		PK Plot		NPK		Mean	
		5	6	3	4	1	2		
P		Previous cropping 1958-69, Arable or fallow							
1964	1970-72								
0	0	99.1	121.3	94.5	90.6	86.7	93.2	97.6	
1	0	108.0	105.0	90.6	94.5	94.5	89.3	97.0	
2	0	88.8	113.9	98.4	101.0	88.0	99.7	98.3	
4	0	87.3	93.2	98.4	98.4	94.5	91.9	93.9	
0	1	93.2	103.5	99.7	90.6	91.9	94.5	95.6	
1	1	100.6	97.6	101.0	93.2	97.1	93.2	97.1	
2	1	103.5	116.9	94.5	101.0	89.3	90.6	99.3	
4	1	87.3	94.7	94.5	97.1	95.8	90.6	93.3	
Mean		96.0	105.8	96.4	95.8	92.2	92.9	96.5	
P		Previous cropping 1958-69, Grass							
1964-69	1970-72								
0	0	96.2	96.2	90.6	80.3	90.6	98.4	92.0	
1	0	110.9	94.7	95.8	124.3	94.5	91.9	102.0	
2	0	105.0	90.2	93.2	88.0	95.8	95.8	94.7	
4	0	99.1	97.6	101.0	88.0	90.6	90.6	94.5	
0	1	91.7	91.7	98.4	99.7	91.9	93.2	94.4	
1	1	94.7	100.6	98.4	101.0	108.7	95.8	99.9	
2	1	100.6	88.8	85.4	84.1	88.0	99.7	91.1	
4	1	100.6	91.7	101.0	99.7	98.4	91.9	97.2	
Mean		99.9	93.9	95.5	95.6	94.8	94.7	95.7	



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POTATOES

TOTAL TUBERS: TONNES/HECTARE

1848 - 1951

		None		PK Plot		NPK		Mean
		5	6	3	4	1	2	
P		Previous cropping 1958-69, Arable or fallow						
1964	1970-72							
0	0	32.8	36.2	49.2	40.0	45.2	42.3	41.0
1	0	40.8	31.7	47.6	42.3	47.2	49.9	43.2
2	0	44.2	42.6	46.6	39.3	46.9	51.2	45.1
4	0	42.6	42.3	55.8	49.2	53.2	53.5	49.4
0	1	46.4	46.0	50.2	43.3	49.2	54.2	48.2
1	1	46.4	46.0	51.2	50.5	52.2	55.5	50.3
2	1	54.7	44.9	57.8	43.6	52.2	54.8	51.3
4	1	46.8	49.1	62.7	49.2	54.8	55.2	53.0
Mean		44.3	42.4	52.6	44.7	50.1	52.1	47.7
P		Previous cropping 1958-69, Grass						
1964-69	1970-72							
0	0	25.3	21.5	30.7	26.8	52.5	38.6	32.6
1	0	47.6	47.2	53.8	44.9	53.5	50.5	49.6
2	0	49.4	42.6	53.2	50.9	54.5	55.5	51.0
4	0	52.5	51.0	56.5	53.8	49.5	55.5	53.1
0	1	46.0	50.6	55.8	46.9	59.4	54.2	52.2
1	1	52.1	52.1	59.4	51.8	53.8	57.5	54.5
2	1	51.0	51.7	49.2	54.2	66.1	60.4	55.4
4	1	45.3	52.1	53.2	42.6	58.5	58.5	51.7
Mean		46.1	46.1	51.5	46.5	56.0	53.8	50.0

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POTATOES

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

1848 - 1951

		None		PK Plot		NPK		Mean	
		5	6	3	4	1	2		
P		Previous cropping 1958-69, Arable or fallow							
1964	1970-72								
0	0	85.7	87.5	88.7	90.9	87.1	82.9	87.2	
1	0	87.4	91.7	85.3	89.1	82.1	81.6	86.2	
2	0	88.3	88.5	86.7	85.7	83.9	87.2	86.7	
4	0	88.0	85.7	79.9	86.6	80.6	82.1	83.8	
0	1	85.1	86.1	84.2	87.0	81.9	82.8	84.5	
1	1	83.9	91.0	85.6	86.9	81.0	80.0	84.7	
2	1	84.9	86.6	79.0	83.3	82.1	85.4	83.5	
4	1	83.9	88.5	84.0	84.6	81.1	78.7	83.5	
Mean		85.9	88.2	84.2	86.8	82.5	82.6	85.0	
P		Previous cropping 1958-69, Grass							
1964-69	1970-72								
0	0	81.2	82.5	85.4	84.6	92.1	85.7	85.3	
1	0	90.2	84.0	89.2	93.8	87.1	87.7	88.7	
2	0	88.9	87.6	89.5	85.2	88.0	85.7	87.5	
4	0	89.3	90.4	88.4	87.3	80.3	84.6	86.7	
0	1	88.0	89.6	88.2	91.2	87.8	83.5	88.0	
1	1	88.0	87.0	85.5	91.3	80.3	80.1	85.4	
2	1	85.9	85.4	90.4	84.2	87.0	80.7	85.6	
4	1	88.8	88.4	81.9	88.0	84.0	82.5	85.6	
Mean		87.5	86.8	87.3	88.2	85.8	83.8	86.6	

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OATS

GRAIN: TONNES/HECTARE

	Plot						Mean
	5	6	3	4	1	2	
K	Previous cropping 1959-62, Arable. 1963-71, Fallow						
0	4.69	4.85	4.56	4.75	4.70	6.01	4.93
1	7.58	4.55	4.72	5.06	4.76	3.98	5.11
2	4.27	1.83	4.96	4.76	4.91	4.86	4.27
4	4.16	7.94	4.53	5.16	4.49	4.57	4.41
Mean	5.18	4.80	4.69	4.93	4.71	3.75	4.68
K	Previous cropping 1958-70, Grass 1971, Fallow						
0	3.74	4.33	5.12	4.56	4.39	3.81	4.33
1	4.57	4.29	4.28	5.15	5.59	6.55	5.07
2	4.56	3.94	4.84	4.88	4.24	3.52	4.16
4	4.29	3.66	4.05	3.26	3.73	2.95	3.65
Mean	4.29	4.05	4.57	4.21	4.49	4.21	4.30

Mean D.M. %: 86.5