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Numerical Results of the Field Experiments 1970

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70/R/AG/6 Agdell - Grass and Fallow, Sugar Beet and Barley

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AGDELL

(70/R/AG/6)

Grass, sugar beet and barley 1970.

First year of revised scheme testing fresh P on two phases per annum of a three course rotation - sugar beet, barley, potatoes. Crops in 1970 sugar beet and barley.

For history, past treatments etc. and for previous years' results. see 'Details' 1967 and 'Results' 68/A/4 and 69/R/AG/6.

Area of each sub-plot:

Grass and fallow: Plots 1, 2, 3, 4 - 0.0180. Plots 5, 6 - 0.0162.

Area harvested: Plots 1, 2, 3, 4 - 0.0023. Plots 5, 6 - 0.0020.

Sugar beet and barley: Plots 1, 2, 3, 4 - 0.0045. Plots 5, 6 - 0.0040.

Area harvested: Sugar beet: Plots 1, 2, 3, 4 - 0.0019. Plots 5, 6 - 0.0017. Barley: Plots 1, 2, 3, 4 - 0.0017. Plots 5, 6 - 0.0015.

New superphosphate treatments:

Sugar beet: None (P0), 1.0 cwt (P2) P205

Barley: None (P0), 0.5 cwt (P1) P205
(P as single superphosphate).

Only the sub-plots formerly testing P have been brought into the new scheme. Pairs of these sub-plots were split in a North-South direction for crops. Each original sub-plot was further split in an East-West direction for the test of fresh superphosphate.

Treatments and cropping on sub-plots testing K were unaltered.

Balancing P and K: P (as triple superphosphate) and K (as muriate of potash) were applied on 18 Nov, 1969, to balance removals by grass in 1969, to all sub-plots except P0, which continues to receive no P, and K0, which continues to receive no K.

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Plot No	Rates in cwt P205				Rates in cwt P205			
	Sub-plots testing P:-				Sub-plots testing K:-			
	P0	P1	P2	P4	K0	K1	K2	K4
1	0	0.41	0.44	0.47	0.35	0.45	0.46	0.49
2	0	0.36	0.43	0.47	0.31	0.44	0.52	0.47
3	0	0.35	0.39	0.39	0.34	0.39	0.39	0.39
4	0	0.40	0.36	0.45	0.42	0.44	0.40	0.46
5	0	0.29	0.34	0.39	0.29	0.36	0.36	0.35
6	0	0.31	0.36	0.36	0.22	0.42	0.41	0.44

	Rates in cwt K20				Rates in cwt K20			
	Sub-plots testing P:-				Sub-plots testing K:-			
	P0	P1	P2	P4	K0	K1	K2	K4
1	2.59	3.00	3.13	2.92	0	2.36	2.60	3.08
2	2.24	2.67	2.93	2.99	0	2.20	2.90	2.81
3	1.99	2.47	2.75	2.44	0	2.38	2.18	2.53
4	1.30	2.80	2.36	2.84	0	2.46	2.19	2.77
5	0.99	2.25	2.26	2.48	0	1.96	2.10	2.23
6	0.81	2.20	2.26	2.21	0	2.26	2.20	2.45

Basal applications: Manures:-

Sugar beet: 1.5 cwt N as 'Nitro-Chalk', 2.5 cwt K2O as muriate of potash, 0.8 cwt MgO as kieserite.

Barley: 0.75 cwt N, 0.48 cwt K2O as (25:0:16).

Grass: as previously.

Insecticide to sugar beet: Menazon ('Saphicol' at 0.5 pints in 40 gals) on 2 occasions.

Cultivations, etc.: Ground chalk applied at 25 cwt to main plots 1 and 2 and to South half of 3 and 4: 31 Oct, 1969.

Grass: Basal N applied: 18 Mar, 1970 and 15 June. Cut twice for silage: 4 June and 3 Aug. Ploughed: 4 Sept.

Fallow: Ploughed: 5 Dec, 1969. Rotary cultivated twice: 10 June, 1970 and 22 July.

Sugar beet: Ploughed: 5 Dec, 1969. Test P and basal NK Mg applied: 30 Apr, 1970. Seed drilled at 8 lb: 4 May. Singled: 8 June. Insecticide applied: 25 June, 15 July. Lifted: 19 Oct. Variety: Klein E.

Barley: Ploughed: 5 Dec, 1969. Test P applied, seed drilled at 150 lb, basal N and K applied: 24 Apr, 1970. Combine harvested: 18 Aug. Variety: Julia.

Errata to 'Results' 1969: Delete table on p.24 of 'Rates in cwt K2O' and replace by:

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Rates in cwt K2D

Plot No	Sub-plots testing P:-				Sub-plots testing K:-			
	P0	P1	P2	P4	K0	K1	K2	K4
1	2.23	3.31	2.72	3.23	0	2.64	3.02	3.06
2	1.40	2.85	3.25	3.08	0	2.66	2.89	2.88
3	1.32	2.66	2.77	2.97	0	2.54	2.38	2.72
4	0.89	2.88	2.66	2.67	0	2.85	2.76	3.09
5	0.65	2.26	2.46	2.67	0	2.19	2.54	2.80
6	0.68	2.42	2.56	2.61	0	2.42	2.52	2.49

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SUMMARY OF RESULTS

GRASS

DRY MATTER: CWT

Plot

K	5	6	3	4	1	2	Mean
1ST CUT							
0	14.5	16.2	25.0	22.8	27.5	17.4	20.6
1	36.2	40.6	36.9	39.2	40.8	42.7	39.4
2	36.4	45.2	40.5	41.9	39.1	44.5	41.3
4	38.6	40.7	41.4	42.0	39.2	45.1	41.2
Mean	31.4	35.7	36.0	36.5	36.7	37.4	35.6
2ND CUT							
0	3.6	2.6	3.1	3.6	4.4	1.6	3.2
1	10.9	13.2	8.9	14.1	11.1	11.9	11.7
2	9.5	10.7	9.2	11.3	12.3	22.1	12.5
4	8.6	10.3	8.9	13.6	10.6	14.3	11.0
Mean	8.2	9.2	7.5	10.6	9.6	12.5	9.6
TOTAL OF 2 CUTS							
0	18.1	18.8	28.1	26.4	31.8	19.1	23.7
1	47.0	53.8	45.8	53.3	52.0	54.6	51.1
2	45.9	55.9	49.7	53.2	51.4	66.5	53.8
4	47.2	51.0	50.3	55.5	49.8	59.4	52.2
Mean	39.6	44.9	43.5	47.1	46.3	49.9	45.2
Mean D.M. %:	1st cut:		27.1				
	2nd cut:		28.9				
	Total of 2 cuts:		28.0				

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SUGAR BEET

ROOTS (WASHED): TONS

Treatment 1848-1957	Plot						Mean
	5 None	6	3 PK	4	1 NPK	2	
P	Previous cropping 1958-69, Arable or fallow						
1964-69 1970							
0 0	8.15	13.63	15.90	11.22	12.51	13.21	12.44
1 0	11.09	13.36	14.03	11.34	15.90	11.46	12.86
2 0	13.76	13.50	16.37	13.68	12.39	16.72	14.40
4 0	15.23	14.83	12.98	16.49	16.14	15.78	15.24
0 2	12.03	14.83	16.84	15.90	15.78	12.98	14.73
1 2	13.50	9.49	13.91	10.99	15.55	12.51	12.66
2 2	16.97	11.49	17.89	14.62	14.97	16.49	15.40
4 2	11.76	13.63	11.81	14.50	17.89	12.74	13.72
Mean	12.81	13.10	14.97	13.59	15.14	13.99	13.93
P	Previous cropping 1958-69, Grass						
1964-69 1970							
0 0	6.81	1.07	4.79	8.54	12.74	12.28	7.71
1 0	14.57	16.17	16.84	16.95	17.54	16.72	16.46
2 0	18.04	13.76	15.67	16.60	13.68	19.06	16.14
4 0	10.56	17.77	16.60	12.39	16.49	17.77	15.26
0 2	14.03	11.22	11.46	12.16	15.55	15.08	13.25
1 2	13.50	15.90	16.95	15.32	17.77	17.42	16.14
2 2	18.57	13.63	16.02	13.68	13.33	16.14	15.23
4 2	15.63	17.50	14.97	13.91	14.26	16.49	15.46
Mean	13.96	13.38	14.16	13.69	15.17	16.37	14.46

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SUGAR BEET

SUGAR %

Plot

Treatment 1848-1957	5 None	6	3 PK	4	1 NPK	2	Mean	
P	Previous cropping 1958-69, Arable or fallow							
1964-69 1970								
0 0	16.3	16.7	17.6	14.8	16.9	16.1	16.4	
1 0	17.1	16.6	17.2	15.2	17.2	16.0	16.5	
2 0	16.0	16.4	16.7	16.8	16.4	16.7	16.5	
4 0	17.2	17.2	17.0	15.9	17.0	17.2	16.9	
0 2	15.3	17.0	16.9	16.0	16.5	16.0	16.3	
1 2	16.3	16.3	16.8	16.2	16.7	15.9	16.4	
2 2	16.5	16.1	16.8	16.6	16.6	16.6	16.5	
4 2	15.6	16.8	17.1	16.6	16.2	16.4	16.5	
Mean	16.3	16.6	17.0	16.0	16.7	16.3	16.5	
P	Previous cropping 1958-69, Grass							
1964-69 1970								
0 0	16.0	16.6	14.9	15.2	16.3	16.0	15.8	
1 0	17.2	16.7	17.4	16.3	16.8	16.4	16.8	
2 0	16.5	17.0	17.4	16.3	16.7	16.8	16.8	
4 0	17.0	16.5	17.0	16.4	16.8	17.1	16.8	
0 2	16.4	15.9	16.1	15.7	16.4	16.6	16.2	
1 2	16.5	16.5	17.3	16.8	16.7	17.3	16.9	
2 2	17.3	16.9	17.2	16.5	16.1	16.7	16.8	
4 2	16.9	17.0	17.7	16.4	16.8	17.1	17.0	
Mean	16.7	16.7	16.9	16.2	16.6	16.8	16.6	

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SUGAR BEET

TOTAL SUGAR: CWT

		Plot						
Treatment 1848-1957		5 None	6	3	4 PK	1	2 NPK	Mean
P		Previous cropping 1958-69, Arable or fallow						
1964-69	1970							
0	0	26.5	45.5	56.1	33.2	42.3	42.6	41.0
1	0	37.8	44.3	48.3	34.5	54.8	36.6	42.7
2	0	44.1	44.3	54.7	45.9	40.7	55.8	47.6
4	0	52.3	50.9	44.1	52.5	54.7	54.2	51.5
0	2	36.7	50.4	56.8	50.7	52.1	41.5	48.1
1	2	43.9	30.9	46.8	35.5	52.0	39.7	41.5
2	2	56.1	36.9	60.1	48.4	49.7	54.6	51.0
4	2	36.7	45.8	40.5	48.1	58.0	41.8	45.1
Mean		41.8	43.6	50.9	43.6	50.5	45.9	46.1
P		Previous cropping 1958-69, Grass						
1964-69	1970							
0	0	21.9	3.5	14.3	26.0	41.5	39.3	24.4
1	0	50.2	54.1	58.6	55.3	59.1	54.9	55.4
2	0	59.7	46.9	54.7	54.0	45.7	64.2	54.2
4	0	36.0	58.8	56.3	40.6	55.3	60.9	51.3
0	2	46.0	35.7	36.9	38.1	51.1	50.1	43.0
1	2	44.5	52.6	58.8	51.4	59.3	60.4	54.5
2	2	64.2	46.0	55.0	45.0	42.9	53.8	51.1
4	2	52.9	59.6	52.9	45.7	48.0	56.4	52.6
Mean		46.9	44.7	48.4	44.5	50.3	55.0	48.3

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SUGAR BEET

TOPS: TONS

Treatment 1848-1957		Plot						Mean
		5 None	6	3	4 PK	1	2 NPK	
P		Previous cropping 1958-69, Arable or fallow						
1964-69	1970							
0	0	12.98	18.24	21.75	15.90	19.18	19.41	17.91
1	0	11.34	17.07	19.64	16.84	21.28	16.37	17.09
2	0	13.45	18.94	19.18	16.37	17.77	21.28	17.83
4	0	18.82	17.19	16.60	18.01	21.51	18.94	18.51
0	2	16.25	18.47	21.28	23.38	22.68	23.38	20.91
1	2	14.73	16.14	20.11	16.84	23.62	19.64	18.51
2	2	16.25	16.60	21.98	22.68	19.18	21.51	19.70
4	2	15.55	17.19	19.41	20.11	22.45	18.47	18.86
Mean		14.92	17.48	19.99	18.77	20.96	19.88	18.67
P		Previous cropping 1958-69, Grass						
1964-69	1970							
0	0	7.02	1.14	6.78	9.59	18.24	15.90	9.78
1	0	17.54	19.99	25.72	20.11	24.09	24.09	21.92
2	0	18.59	17.77	20.81	20.58	22.45	26.42	21.10
4	0	11.93	20.23	22.68	16.60	23.62	27.36	20.40
0	2	19.29	16.02	21.28	16.60	24.32	23.85	20.23
1	2	13.33	22.22	23.62	20.11	25.49	23.38	21.36
2	2	19.41	14.26	22.22	18.47	20.11	25.49	19.99
4	2	17.77	20.93	18.24	16.37	21.98	23.62	19.82
Mean		15.61	16.57	20.17	17.30	22.54	23.76	19.33

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SUGAR BEET

PLANT NUMBER: THOUSANDS

Treatment 1848-1957		Plot						Mean
		5 None	6	3 PK	4	1 NPK	2	
P		Previous cropping 1958-69, Arable or fallow						
1964-69	1970							
0	0	16.8	19.4	26.2	17.8	30.9	25.1	22.7
1	0	15.2	22.5	27.2	16.2	31.4	23.0	22.6
2	0	14.1	18.3	24.6	18.9	25.7	25.1	21.1
4	0	22.5	19.4	23.6	15.7	27.8	24.6	22.3
0	2	18.3	17.8	25.7	28.3	33.0	24.1	24.5
1	2	18.3	17.3	21.0	16.8	30.9	24.1	21.4
2	2	15.2	15.2	24.6	20.4	29.3	24.6	21.6
4	2	14.1	14.1	23.0	19.9	26.7	22.5	20.1
Mean		16.8	18.0	24.5	19.3	29.5	24.2	22.0
P		Previous cropping 1958-69, Grass						
1964-69	1970							
0	0	22.5	18.6	23.6	18.3	28.3	26.7	23.0
1	0	16.8	21.0	32.0	21.0	23.0	26.2	23.3
2	0	21.0	16.2	22.5	22.0	28.3	26.7	22.8
4	0	13.1	20.4	21.0	16.8	29.3	29.9	21.7
0	2	24.1	18.9	21.5	17.8	29.3	27.8	23.2
1	2	13.1	21.0	23.6	20.4	28.3	27.8	22.3
2	2	25.1	17.3	23.0	16.8	28.8	24.6	22.6
4	2	17.3	20.4	19.9	19.4	24.6	30.4	22.0
Mean		19.1	19.2	23.4	19.1	27.5	27.5	22.6

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BARLEY

GRAIN: CWT

Plot

Treatment 1848-1957		5 None	6	3	4 PK	1	2 NPK	Mean
P	Previous cropping 1958-69, Arable or fallow							
1964-69	1970							
0	0	9.1	13.8	34.3	14.9	14.7	19.9	17.8
1	0	23.1	21.5	36.7	25.3	21.8	11.1	23.3
2	0	29.4	37.8	37.5	40.0	20.7	24.6	31.7
4	0	29.6	39.3	34.8	43.0	25.7	21.7	32.4
0	1	8.0	25.1	33.4	14.7	18.2	15.0	19.1
1	1	28.2	27.1	36.9	30.5	14.9	14.3	25.3
2	1	36.3	36.2	35.3	41.0	21.1	31.0	33.5
4	1	32.0	38.5	39.3	37.7	29.6	23.3	33.4
Mean		24.5	29.9	36.0	30.9	20.8	20.1	27.0

P	Previous cropping 1958-69, Grass							
1964-69	1970							
0	0	18.8	16.6	28.4	18.2	26.9	24.5	22.2
1	0	33.2	36.0	36.3	29.2	35.1	30.5	33.4
2	0	32.5	41.5	35.7	26.0	25.7	29.2	31.8
4	0	34.7	37.6	37.6	42.6	30.1	34.6	36.2
0	1	17.9	17.1	30.0	19.0	29.5	29.3	23.8
1	1	28.4	38.8	37.5	31.6	28.5	30.0	32.5
2	1	32.1	37.6	35.4	32.8	26.8	32.1	32.8
4	1	38.3	38.3	39.7	25.8	34.3	34.7	35.2
Mean		29.5	32.9	35.1	28.2	29.6	30.6	31.0

Mean D.M. %: 84.7

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BARLEY

STRAW: CWT

Plot

Treatment 1848-1957		5 None	6	3 PK	4	1 NPK	2	Mean
P	Previous cropping 1958-69, Arable or fallow							
1964-69	1970							
0	0	4.3	10.4	19.2	9.8	10.8	14.5	11.5
1	0	13.9	13.4	24.5	15.8	13.8	7.0	14.7
2	0	16.1	21.8	21.2	23.3	13.7	16.0	18.7
4	0	14.5	20.7	19.6	24.2	16.2	12.9	18.0
0	1	3.1	12.6	19.0	8.6	16.8	11.0	11.9
1	1	16.5	16.0	24.2	19.7	18.1	8.9	17.2
2	1	21.7	20.6	19.0	23.0	13.1	20.3	19.6
4	1	14.9	20.4	23.8	23.8	16.4	11.3	18.4
Mean		13.1	17.0	21.3	18.5	14.9	12.7	16.3

P	Previous cropping 1958-69, Grass							
1964-69	1970							
0	0	7.6	9.3	15.1	8.8	17.7	14.3	12.1
1	0	16.2	17.7	19.2	16.9	19.5	20.5	18.3
2	0	16.2	19.9	20.4	14.9	22.5	20.1	19.0
4	0	18.6	20.1	23.2	24.1	20.4	22.5	21.5
0	1	8.6	8.2	14.8	11.0	17.6	16.6	12.8
1	1	14.8	19.7	21.9	18.6	17.2	23.5	19.3
2	1	14.5	19.0	19.6	19.7	20.1	20.7	18.9
4	1	19.8	19.6	22.4	22.8	22.2	20.6	21.2
Mean		14.5	16.7	19.6	17.1	19.6	19.9	17.9

Mean D.M. %: 54.0