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Yields of the Field Experiments 1972

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72/R/CS/14 NPK to Old Grass - Old Grass

Rothamsted Research

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72/R/CS/14

NPK TO OLD GRASS

Object: To study the effects of a range of P and K levels on yields of permanent pasture on sites with much or little P and K in the soil - Park Grass old plots 5/1 and 5/2.

Sponsor: A.E. Johnston.

The eighth year, old grass.

For previous years see 65/C/22(t), 66/C/13(t), 67/C/9(t), 68/C/7 and 69-71/R/CS/14.

Whole plot dimensions: 1.83 x 10.1. Area harvested: 0.00086.

Cultivations, etc.: P and K applied: 6 Dec, 1971. N applied: 10 Mar, 1972. Cut three times: 30 May, 26 July, 23 Oct. N applied after first two cuts.

Standard errors per plot. Dry matter, tonnes/hectare.

Plot 5/1:	1st cut:	0.196 or 7.1% (11 d.f.)
	2nd cut:	0.292 or 15.6% (11 d.f.)
	3rd cut:	0.193 or 35.7% (11 d.f.)
	Total of 3 cuts:	0.434 or 8.4% (11 d.f.)
Plot 5/2:	1st cut:	0.577 or 15.6% (11 d.f.)
	2nd cut:	0.228 or 9.9% (11 d.f.)
	3rd cut:	0.206 or 16.4% (11 d.f.)
	Total of 3 cuts:	0.567 or 7.8% (11 d.f.)

72/R/CS/14

TABLES OF MEANS

PLOT 5/1: DRY MATTER, TONNES/HECTARE

1ST CUT

Excluding K1 and K6 plots

	P				
	0	1	2	4	Mean
Mean	1.96	3.32	3.36	3.38	3.01
K					
0	1.83	1.97	2.10	2.18	2.02
2	2.48	3.80	4.08	3.27	3.41
4	1.75	4.01	3.60	4.29	3.41
8	1.77	3.51	3.68	3.77	3.18
N					
1	1.97	2.86	2.74	2.96	2.63
2	1.95	3.79	3.98	3.80	3.38
	K				
	0	2	4	8	
N					
1	2.09	3.02	2.63	2.79	
2	1.94	3.80	4.19	3.58	

STANDARD ERRORS OF DIFFERENCES

P	K	N	P K	P N	K N
0.098	0.098	0.069	0.196	0.139	0.139

72/R/CS/14

PLOT 5/1: DRY MATTER, TONNES/HECTARE

1ST CUT

K1 and K6 plots

	K		Mean
	1*	6*	
N			
1	1.90	1.50	1.70
2	2.03	2.11	2.07
Mean	1.97	1.81	1.89

STANDARD ERRORS OF DIFFERENCES

N	K	N K
0.139	0.139	0.196

Grand mean: 2.78
Mean D.M. %: 23.4

* Applied 1965

72/R/CS/14

PLOT 5/1: DRY MATTER, TONNES/HECTARE

2ND CUT

Excluding K1 and K6 plots

	P				
	0	1	2	4	Mean
Mean	1.98	1.99	1.96	1.87	1.95
K					
0	1.47	1.65	1.47	1.26	1.46
2	2.04	1.88	1.83	1.79	1.89
4	2.28	2.03	2.18	2.20	2.17
8	2.12	2.41	2.38	2.25	2.29
N					
1	1.79	1.87	1.77	1.74	1.79
2	2.16	2.11	2.16	2.01	2.11

	K				
	0	2	4	8	
N					
1	1.48	1.59	2.03	2.07	
2	1.44	2.18	2.31	2.50	

STANDARD ERRORS OF DIFFERENCES

P	K	N	P K	P N	K N
0.146	0.146	0.103	0.292	0.206	0.206

72/R/CS/14

PLOT 5/1: DRY MATTER, TONNES/HECTARE

2ND CUT

K1 and K6 plots

	K		
	1*	6*	Mean
N			
1	1.28	1.38	1.33
2	1.92	1.67	1.79
Mean	1.60	1.53	1.56

STANDARD ERRORS OF DIFFERENCES

N	K	N K
0.206	0.206	0.292

Grand mean: 1.87
Mean D.M. %: 25.5

* Applied 1965

72/R/CS/14

PLOT 5/1: DRY MATTER, TONNES/HECTARE

3RD CUT

Excluding K1 and K6 plots

	P				
	0	1	2	4	Mean
Mean	0.23	0.64	0.72	0.84	0.61
K					
0	0.26	0.36	0.48	0.60	0.42
2	0.34	0.67	1.03	0.62	0.67
4	0.11	0.95	0.69	1.00	0.69
8	0.21	0.59	0.68	0.16	0.66
N					
1	0.20	0.47	0.54	0.70	0.48
2	0.26	0.81	0.90	0.99	0.74
	K				
	0	2	4	8	
N					
1	0.37	0.54	0.44	0.56	
2	0.48	0.79	0.93	0.76	

STANDARD ERRORS OF DIFFERENCES

P	K	N	P	P	K
			K	N	N
0.097	0.097	0.068	0.193	0.137	0.137

72/R/CS/14

PLOT 5/1: DRY MATTER, TONNES/HECTARE

3RD CUT

K1 and K6 plots

	K		
	1*	6*	Mean
N			
1	0.23	0.25	0.24
2	0.29	0.31	0.30
Mean	0.26	0.28	0.27

STANDARD ERRORS OF DIFFERENCES

N	K	N K
0.137	0.137	0.193

Grand mean: 0.54
Mean D.M. %: 35.3

* Applied 1965

72/R/CS/14

PLOT 5/1: DRY MATTER, TONNES/HECTARE

TOTAL OF 3 CUTS

Excluding K1 and K6 plots

	P				Mean
	0	1	2	4	
Mean	4.17	5.95	6.05	6.10	5.57
K					
0	3.56	3.97	4.04	4.04	3.90
2	4.86	6.35	6.94	5.68	5.96
4	4.15	6.99	6.46	7.48	6.27
8	4.10	6.51	6.74	7.18	6.13
N					
1	3.96	5.20	5.06	5.40	4.90
2	4.37	6.71	7.04	6.80	6.23

	K			
	0	2	4	8
N				
1	3.94	5.15	5.11	5.42
2	3.87	6.76	7.43	6.84

STANDARD ERRORS OF DIFFERENCES

P	K	N	P K	P N	K N
0.217	0.217	0.154	0.434	0.307	0.307

72/R/CS/14

PLOT 5/1: DRY MATTER, TONNES/HECTARE

TOTAL OF 3 CUTS

K1 and K6 plots

	K		
	1*	6*	Mean
N			
1	3.42	3.14	3.28
2	4.23	4.09	4.16
Mean	3.82	3.62	3.72

STANDARD ERRORS OF DIFFERENCES

N	K	N K
0.307	0.307	0.434

Grand mean: 5.20
Mean D.M. %: 28.1

* Applied 1965

72/R/CS/14

PLOT 5/2: DRY MATTER, TONNES/HECTARE

1ST CUT

Excluding K1 and K6 plots

	P				
	0	1	2	4	Mean
Mean	3.67	4.02	3.59	3.43	3.68
K					
0	3.55	4.01	2.94	3.27	3.44
2	3.77	4.36	4.11	3.23	3.87
4	4.13	3.87	3.95	3.80	3.94
8	3.23	3.83	3.33	3.43	3.46
N					
1	2.69	2.41	2.81	2.36	2.57
2	4.65	5.63	4.37	4.51	4.79

	K				
	0	2	4	8	
N					
1	2.42	2.84	2.72	2.28	
2	4.47	4.89	5.16	4.63	

STANDARD ERRORS OF DIFFERENCES

P	K	N	P	P	K
			K	N	N
0.289	0.289	0.197	0.577	0.408	0.408

72/R/CS/14

PLOT 5/2: DRY MATTER, TONNES/HECTARE

1ST CUT

K1 and K6 plots

K

	1*	6*	Mean
N			
1	3.20	3.22	3.21
2	4.24	4.53	4.39
Mean	3.72	3.88	3.80

STANDARD ERRORS OF DIFFERENCES

N	K	N K
0.408	0.408	0.577

Grand mean: 3.70
Mean D.M. %: 23.1

* Applied 1965

72/R/CS/14

PLOT 5/2: DRY MATTER, TONNES/HECTARE

2ND CUT

Excluding K1 and K6 plots

	P				
	0	1	2	4	Mean
Mean	2.28	2.28	2.30	2.24	2.28
K					
0	2.15	2.25	2.28	2.18	2.22
2	2.21	2.34	2.47	2.20	2.30
4	2.18	2.31	2.18	2.17	2.21
8	2.59	2.22	2.26	2.42	2.37
N					
1	2.13	2.01	2.09	1.84	2.02
2	2.43	2.55	2.50	2.65	2.53

	K				
	0	2	4	8	
N					
1	1.81	2.20	1.93	2.13	
2	2.62	2.40	2.49	2.61	

STANDARD ERRORS OF DIFFERENCES

P	K	N	P K	P N	K N
0.114	0.114	0.081	0.228	0.161	0.161

72/R/CS/14

PLOT 5/2: DRY MATTER, TONNES/HECTARE

2ND CUT

K1 and K6 plots

K

	1*	6*	Mean
N			
1	2.10	2.08	2.09
2	2.57	2.81	2.69
Mean	2.34	2.45	2.39

STANDARD ERRORS OF DIFFERENCES

N	K	N K
0.161	0.161	0.228

Grand mean: 2.30
Mean D.M. %: 27.0

* Applied 1965

72/R/CS/14

PLOT 5/2: DRY MATTER, TONNES/HECTARE

3RD CUT

Excluding K1 and K6 plots

	P				
	0	1	2	4	Mean
Mean	1.31	1.19	1.26	1.29	1.26
K					
0	1.30	1.04	1.28	1.33	1.24
2	1.36	1.28	1.28	1.30	1.30
4	1.21	1.26	1.17	1.47	1.28
8	1.36	1.18	1.30	1.07	1.23
N					
1	0.89	0.80	0.93	0.77	0.85
2	1.72	1.57	1.58	1.81	1.67

	K				
	0	2	4	8	
N					
1	0.83	0.92	0.84	0.80	
2	1.64	1.69	1.71	1.65	

STANDARD ERRORS OF DIFFERENCES

P	K	N	P K	P N	K N
0.103	0.103	0.073	0.206	0.146	0.146

72/R/CS/14

PLOT 5/2: DRY MATTER, TONNES/HECTARE

3RD CUT

K1 and K6 plots

	K		Mean
	1*	6*	
N			
1	1.01	1.00	1.00
2	1.59	1.46	1.53
Mean	1.30	1.23	1.26

STANDARD ERRORS OF DIFFERENCES

N	K	N K
0.146	0.146	0.206

Grand mean: 1.26
Mean D.M. %: 30.9

* Applied 1965

72/R/CS/14

PLOT 5/2: DRY MATTER, TONNES/HECTARE

TOTAL OF 3 CUTS

Excluding K1 and K6 plots

	P				
	0	1	2	4	Mean
Mean	7.26	7.48	7.14	6.97	7.21
K					
0	7.00	7.29	6.51	6.78	6.90
2	7.34	7.98	7.86	6.73	7.47
4	7.53	7.44	7.30	7.44	7.43
8	7.18	7.23	6.89	6.92	7.06
N					
1	5.71	5.21	5.83	4.97	5.43
2	8.81	9.75	8.45	8.96	8.99

	K				
	0	2	4	8	
N					
1	5.06	5.96	5.50	5.21	
2	8.73	8.98	9.36	8.90	

STANDARD ERRORS OF DIFFERENCES

P	K	N	P	P	K
			K	N	N
0.283	0.283	0.200	0.567	0.401	0.401

72/R/CS/14

PLOT 5/2: DRY MATTER, TONNES/HECTARE

TOTAL OF 3 CUTS

K1 and K6 plots

K

	1*	6*	Mean
N			
1	6.31	6.30	6.31
2	8.40	8.81	8.61
Mean	7.35	7.56	7.46

STANDARD ERRORS OF DIFFERENCES

N	K	N K
0.401	0.401	0.567

Grand mean: 7.26
Mean D.M. %: 27.0

* Applied 1965