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Yields of the Field Experiments 1975

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

Rothamsted Research

Rothamsted Research (1976) 75/ R/CS/14 - NPK to Old Grass - Old Grass ; Yields Of The Field Experiments 1975, pp 153 - 162 - DOI: <https://doi.org/10.23637/ERADOC-1-141>

75/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 eleventh year, old grass.

For previous years see 65/C/22(t), 66/C/13(t), 67/C/9(t), 68/C/7 and 69-74/R/CS/14.

Design: On each site: A single replicate of 2 x 4 x 4 in 2 blocks of 16 plots each, with 2 x 2 additional plots in each block.

Whole plot dimensions: 1.83 x 10.1.

Treatments:

The experiment is duplicated on sites differing in previous history:-

Park Grass Plot 5/1: No P or K

PLOT

5/1NORES

Park Grass Plot 5/2: Superphosphate to supply 34 kg P, sulphate of potash to supply 224 kg K, annually 1898-1964

5/2PKRES

On each site, all combinations of:-

1. Nitrogen fertiliser (kg N for each cut):

NPERCUT

33.6
67.2

33.6
67.2

2. Phosphate (kg P) as superphosphate annually:

P

None
16.8
33.6
67.2

0
16.8
33.6
67.2

3. Potassium (kg K) as potassium chloride annually:

K

None
112
224
448

0
112
224
448

75/R/CS/14

together with extra treatments, all combinations of:-

1. Nitrogen fertiliser (kg N for each cut):

33.6	33.6
67.2	67.2

2. Residues of PK fertilisers applied 1965 only:

33.6 kg P, 56 kg K	34P56K
33.6 kg P, 336 kg K	34P336K

Cultivations, etc.:- P and K applied: 9 Dec, 1974. N applied: 18 Mar, 1975,
6 June and 8 Aug. Cut: 5 June, 7 Aug and 20 Oct.

75/R/CS/14 PLOT 5/1 NORES

EXCLUDING PKRES65 PLOTS

1ST CUT (JUNE 75) DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

P	0.0	16.8	33.6	67.2	MEAN
NPERCUT					
33.6	2.52	4.22	4.10	4.44	3.82
67.2	2.58	4.86	5.26	5.44	4.54
MEAN	2.55	4.54	4.68	4.94	4.18

K	0	112	224	448	MEAN
NPERCUT					
33.6	3.14	3.71	4.49	3.92	3.82
67.2	2.93	4.90	5.39	4.93	4.54
MEAN	3.04	4.30	4.94	4.43	4.18

K	0	112	224	448	MEAN
P					
0.0	2.20	2.73	3.02	2.25	2.55
16.3	3.12	4.51	5.47	5.06	4.54
33.6	3.30	5.05	5.33	5.03	4.68
67.2	3.53	4.92	5.95	5.36	4.94
MEAN	3.04	4.30	4.94	4.43	4.18

	K	0	112	224	448
NPERCUT	P				
33.6	0.0	2.72	2.63	2.76	1.95
	16.3	3.21	3.87	5.22	4.57
	33.6	3.11	4.23	4.60	4.45
	67.2	3.53	4.11	5.40	4.71
67.2	0.0	1.68	2.82	3.28	2.55
	16.3	3.02	5.16	5.72	5.55
	33.6	3.49	5.87	6.06	5.60
	67.2	3.53	5.73	6.49	6.01

1ST CUT DM % 20.5

75/R/CS/14 PLOT 5/1 NORES

EXCLUDING PKRES65 PLOTS

2ND CUT (7/8/75) DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

P	0.0	16.8	33.6	67.2	MEAN
NPERCUT					
33.6	1.04	1.00	0.74	0.82	0.90
67.2	1.47	1.24	1.93	1.64	1.57
MEAN	1.26	1.12	1.34	1.23	1.24

K	0	112	224	448	MEAN
NPERCUT					
33.6	0.40	0.66	1.32	1.22	0.90
67.2	0.47	1.31	2.09	2.43	1.57
MEAN	0.43	0.98	1.70	1.82	1.24

K	0	112	224	448	MEAN
P					
0.0	0.82	1.29	1.49	1.43	1.26
16.8	0.38	1.00	1.78	1.32	1.12
33.6	0.28	0.75	1.99	2.33	1.34
67.2	0.25	0.90	1.56	2.21	1.23
MEAN	0.43	0.98	1.70	1.82	1.24

	K	0	112	224	448
NPERCUT	P				
33.6	0.0	0.71	0.75	1.37	1.31
	16.8	0.26	0.85	1.22	1.67
	33.6	0.23	0.71	1.24	0.78
	67.2	0.38	0.34	1.45	1.10
67.2	0.0	0.93	1.82	1.61	1.54
	16.8	0.50	1.15	2.33	0.98
	33.6	0.32	0.79	2.74	3.88
	67.2	0.11	1.46	1.67	3.32

2ND CUT MEAN DM% 36.8

75/R/CS/14 PLOT 5/1 NORES

EXCLUDING PKRES65 PLOTS

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

P	0.0	16.8	33.6	67.2	MEAN
NPERCUT					
33.6	3.55	5.22	4.84	5.26	4.72
67.2	4.06	6.11	7.19	7.08	6.11
MEAN	3.80	5.66	6.01	6.17	5.41

K	0	112	224	448	MEAN
NPERCUT					
33.6	3.54	4.37	5.81	5.14	4.72
67.2	3.40	6.20	7.47	7.36	6.11
MEAN	3.47	5.29	6.64	6.25	5.41

K	0	112	224	448	MEAN
P					
0.0	3.02	4.01	4.51	3.68	3.80
16.8	3.50	5.52	7.24	6.39	5.66
33.6	3.58	5.80	7.32	7.36	6.01
67.2	3.78	5.82	7.51	7.57	6.17
MEAN	3.47	5.29	6.64	6.25	5.41

	K	0	112	224	448
NPERCUT	P				
33.6	0.0	3.43	3.38	4.12	3.27
	16.8	3.47	4.72	6.44	6.24
	33.6	3.34	4.94	5.84	5.23
	67.2	3.92	4.45	6.86	5.81
67.2	0.0	2.61	4.65	4.89	4.09
	16.8	3.53	6.31	8.05	6.53
	33.6	3.81	6.66	8.80	9.49
	67.2	3.64	7.19	8.16	9.33

TOTAL OF 2 CUTS MEAN DM% 28.7

PLOT AREA HARVESTED 0.00086

75/R/CS/14 PLOT 5/1 NORES

PKRES65 PLOTS

1ST CUT (JUNE 75) DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

PKRES65	34P56K	34P336K	MEAN
NPERCUT			
33.6	1.82	2.04	1.93
67.2	2.35	1.83	2.09
MEAN	2.03	1.93	2.01

1ST CUT DM % 26.3

2ND CUT (7/8/75) DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

PKRES65	34P56K	34P336K	MEAN
NPERCUT			
33.6	0.68	0.51	0.59
67.2	0.57	0.59	0.58
MEAN	0.63	0.55	0.59

2ND CUT MEAN DM% 41.2

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

PKRES65	34P56K	34P336K	MEAN
NPERCUT			
33.6	2.50	2.54	2.52
67.2	2.92	2.42	2.67
MEAN	2.71	2.48	2.60

TOTAL OF 2 CUTS MEAN DM% 33.7

PLOT AREA HARVESTED 0.00086

75/R/CS/14 PLOT 5/2 PKRES

EXCLUDING PKRES65 PLOTS

1ST CUT (JUNE 75) DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

P	0.0	16.8	33.6	67.2	MEAN
NPERCUT					
33.6	4.29	5.24	4.65	4.29	4.62
67.2	6.48	6.29	6.34	5.99	6.28
MEAN	5.38	5.77	5.50	5.14	5.45

K	0	112	224	448	MEAN
NPERCUT					
33.6	4.47	4.72	4.85	4.43	4.62
67.2	5.92	5.97	6.80	6.40	6.28
MEAN	5.19	5.35	5.83	5.42	5.45

K	0	112	224	448	MEAN
P					
0.0	4.97	5.23	6.06	5.27	5.38
16.8	5.79	5.58	6.02	5.67	5.77
33.6	5.04	5.49	5.98	5.49	5.50
67.2	4.98	5.09	5.25	5.24	5.14
MEAN	5.19	5.35	5.83	5.42	5.45

	K	0	112	224	448
NPERCUT	P				
33.6	0.0	4.31	4.13	4.80	3.92
	16.8	5.54	5.44	5.45	4.53
	33.6	4.27	4.66	4.88	4.79
	67.2	3.74	4.65	4.27	4.49
67.2	0.0	5.63	6.32	7.32	6.62
	16.8	6.05	5.72	6.60	6.82
	33.6	5.81	6.32	7.07	6.18
	67.2	6.21	5.54	6.22	5.99

1ST CUT DM % 20.9

75/R/CS/14 PLOT 5/2 PKRES

EXCLUDING PKRES65 PLOTS

2ND CUT (7/8/75) DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

P	0.0	16.8	33.6	67.2	MEAN
NPERCUT					
33.6	1.93	1.24	1.49	1.15	1.45
67.2	2.95	3.08	2.47	3.20	2.92
MEAN	2.44	2.16	1.98	2.17	2.19

K	0	112	224	448	MEAN
NPERCUT					
33.6	1.24	1.60	1.56	1.40	1.45
67.2	2.67	2.35	3.48	3.20	2.92
MEAN	1.96	1.97	2.52	2.30	2.19

K	0	112	224	448	MEAN
P					
0.0	2.00	1.87	2.96	2.93	2.44
16.8	1.73	2.11	2.37	2.42	2.16
33.6	1.81	1.93	2.64	1.54	1.98
67.2	2.28	1.99	2.11	2.31	2.17
MEAN	1.96	1.97	2.52	2.30	2.19

	K	0	112	224	448
NPERCUT	P				
33.6	0.0	1.57	1.86	2.41	1.87
	16.8	0.86	1.54	1.54	0.90
	33.6	1.14	1.91	1.42	1.48
	67.2	1.38	1.00	0.87	1.34
67.2	0.0	2.43	1.89	3.51	3.99
	16.8	2.60	2.58	3.19	3.94
	33.6	2.48	1.94	3.87	1.60
	67.2	3.19	2.93	3.34	3.28

2ND CUT MEAN DM% 28.7

75/R/CS/14 PLOT 5/2 PKRES

EXCLUDING PKRES65 PLOTS

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

P	0.0	16.8	33.6	67.2	MEAN
NPERCUT					
33.6	6.22	6.48	6.14	5.43	6.07
67.2	9.43	9.37	8.82	9.19	9.20
MEAN	7.82	7.92	7.48	7.31	7.63

K	0	112	224	448	MEAN
NPERCUT					
33.6	5.70	6.32	6.41	5.83	6.07
67.2	8.60	8.32	10.28	9.61	9.20
MEAN	7.15	7.32	8.35	7.72	7.63

K	0	112	224	448	MEAN
P					
0.0	6.97	7.10	9.02	8.20	7.82
16.8	7.52	7.69	8.39	8.10	7.92
33.6	6.85	7.42	8.62	7.03	7.48
67.2	7.26	7.08	7.35	7.54	7.31
MEAN	7.15	7.32	8.35	7.72	7.63

	K	0	112	224	448
NPERCUT	P				
33.6	0.0	5.88	5.99	7.21	5.79
	16.8	6.40	7.08	6.99	5.44
	33.6	5.42	6.57	6.30	6.27
	67.2	5.12	5.65	5.15	5.82
67.2	0.0	8.07	8.21	10.83	10.61
	16.8	8.64	8.29	9.78	10.75
	33.6	8.28	8.26	10.94	7.73
	67.2	9.40	8.52	9.56	9.27

TOTAL OF 2 CUTS MEAN DM% 24.8

PLOT AREA HARVESTED 0.00086

75/R/CS/14 PLOT 5/2 PKRES

PKRES65 PLOTS

1ST CUT (JUNE 75) DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

PKRES65 NPERCUT	34P56K	34P336K	MEAN
33.6	4.45	4.26	4.36
67.2	5.58	6.23	5.90
MEAN	5.02	5.24	5.13

1ST CUT DM % 22.6

2ND CUT (7/3/75) DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

PKRES65 NPERCUT	34P56K	34P336K	MEAN
33.6	1.31	1.67	1.74
67.2	2.29	2.68	2.48
MEAN	2.05	2.18	2.11

2ND CUT MEAN DM% 29.3

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

*** TABLES OF MEANS ***

PKRES65 NPERCUT	34P56K	34P336K	MEAN
33.6	6.27	5.94	6.10
67.2	7.87	8.91	8.39
MEAN	7.07	7.42	7.25

TOTAL OF 2 CUTS MEAN DM% 26.0

PLOT AREA HARVESTED 0.00086