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Yields of the Field Experiments 1998

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98/R/BN/7 Barnfield - Ley

Rothamsted Research

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98/R/BN/7

BARNFIELD

Object: The experiment was designed to study the effects of organic and inorganic manures on continuous root crops. It was progressively modified to study effects on other crops.

Sections 1 and 2, 4th year of clover. Sections 3-6, 4th year of grass/clover.

For previous years see 'Details' 1967 and 1973 and 74-97/R/BN/7.

Plot dimensions: 10.7 x 55.9.

Treatments to grass/clover, Sections 3-6: All combinations of:-

Whole plots

1. MANURE Fertilizers and organic manures:

(D)	(D)
(D) PK	(D) P K
PKMG	P K (Na) Mg
P	P
PK	P K
PMG	P (Na) Mg
0	0

P: 35 kg P as triple superphosphate in 1974 and since 1987, single superphosphate in other years

K: 225 kg K as sulphate of potash

(Na): 90 kg Na as sodium chloride until 1973, none since

Mg: 90 kg Mg as kieserite every fourth year since 1974 (sulphate of magnesia until 1973)

(D): Farmyard manure at 35 t until 1975, none since

Sub-plots

2. N PERCUT Nitrogen fertilizer in 1998 (kg N per cut) as 34.5% N, cumulative to previous dressings and residues of forms of N previously each supplying 96 kg N per annum:

75	75, previously nitrate of soda, section 3
100	100, previously sulphate of ammonia, section 4
125	125, previously sulphate of ammonia + castor meal, section 5
150	150, previously castor meal, section 6

No nitrogen fertilizer applied in 1995. Castor meal last applied 1971, nitrate of soda and sulphate of ammonia until 1959.

Plus one plot **MANURE** KMG 100

98/R/BN/7

Treatments to clover, sections 1 and 2 (not given nitrogen fertilizer):

MANURE Fertilizers and organic manures as for grass/clover above, excluding KMG.

NOTES: (1) P, K and D treatments were applied to Sections 1 and 2 until 1980. None were applied subsequently until the resumption of P and K treatments only, from 1985.
(2) Yields were not taken from section 2.

Experimental diary:

04-Dec-97 : T : P applied.
21-Jan-98 : T : K and Mg applied.
26-Feb-98 : T : N applied.
18-Mar-98 : B : Rolled.
17-Jun-98 : B : Cut, herbage removed.
10-Jul-98 : T : Sections 1 & 2 only: Checkmate at 1.75 l in 400 l.
05-Sep-98 : T : Sections 1 & 2 only: Topped.
08-Dec-98 : T : Cut, herbage removed.

NOTE: Herbage samples were taken for chemical analysis.

GRASS/CLOVER

1ST CUT (17/6/98) DRY MATTER TONNES/HECTARE

***** Tables of means *****

N PERCUT MANURE	75	100	125	150	Mean
(D)	5.63	5.43	4.14	5.62	5.21
(D) PK	6.74	7.76	7.11	5.79	6.85
PKMG	6.89	5.83	5.66	6.25	6.16
P	4.16	3.24	2.49	3.98	3.47
PK	6.06	5.92	6.08	6.36	6.10
PMG	4.49	3.84	3.28	3.94	3.89
0	4.95	3.90	3.34	4.33	4.13
Mean	5.56	5.13	4.59	5.18	5.12

MANURE KMG 100 5.29

Grand mean 5.12

1ST CUT MEAN DM% 18.9

98/R/BN/7

GRASS/CLOVER

2ND CUT (8/12/98) DRY MATTER TONNES/HECTARE

***** Tables of means *****

N PERCUT MANURE	75	100	125	150	Mean
(D)	1.95	3.29	3.39	4.70	3.33
(D) PK	3.11	3.72	3.49	3.70	3.51
PKMG	2.74	3.50	3.30	3.06	3.15
P	0.70	1.95	1.83	1.44	1.48
PK	2.84	3.02	3.12	2.86	2.96
PMG	1.54	2.26	1.52	1.67	1.75
0	1.21	1.72	1.51	2.73	1.79
Mean	2.01	2.78	2.59	2.88	2.57

MANURE KMG 100 2.82

Grand mean 2.58

2ND CUT MEAN DM% 15.9

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

***** Tables of means *****

N PERCUT MANURE	75	100	125	150	Mean
(D)	7.58	8.72	7.54	10.32	8.54
(D) PK	9.85	11.48	10.60	9.50	10.36
PKMG	9.63	9.34	8.95	9.30	9.30
P	4.86	5.19	4.31	5.42	4.95
PK	8.90	8.94	9.20	9.22	9.06
PMG	6.03	6.10	4.80	5.61	5.63
0	6.16	5.62	4.85	7.06	5.92
Mean	7.57	7.91	7.18	8.06	7.68

MANURE KMG 100 8.11

Grand mean 7.70

TOTAL OF 2 CUTS MEAN DM% 17.4

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CLOVER

1ST CUT (17/6/98) DRY MATTER TONNES/HECTARE

***** Tables of means *****

MANURE	(D)	(D) PK	PKMG	P	PK	PMG	0	Mean
	3.33	4.39	4.16	3.93	4.04	3.83	2.26	3.71

1ST CUT MEAN DM% 15.1

2ND CUT (8/12/98) DRY MATTER TONNES/HECTARE

***** Tables of means *****

MANURE	(D)	(D) PK	PKMG	P	PK	PMG	0	Mean
	0.38	0.62	0.20	0.14	0.21	0.24	0.16	0.28

2ND CUT MEAN DM% 15.2

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

***** Tables of means *****

MANURE	(D)	(D) PK	PKMG	P	PK	PMG	0	Mean
	3.71	5.02	4.36	4.07	4.25	4.07	2.42	3.99

TOTAL OF 2 CUTS MEAN DM% 15.2

PLOT AREA HARVESTED 0.00155